CONCURRENT VALIDATION OF ALASKA'S JUVENILE JUSTICE SUICIDE RISK SCREENING MEASURE

By
Jaymes Gonzales

RECOMMENDED:

James Allen, Ph.D.

Vivian Gonzalez, Ph.D.

Patricia Sandberg, Ph.D.

Robert Boeckmann, Ph.D., Advisory Committee Chair

James Fitterling, Ph.D., UAA Program Director
Ph.D. Program in Clinical-Community Psychology

Jason Whipple, Ph.D., Interim UAF Program Director
Ph.D. Program in Clinical-Community Psychology

APPROVED:

John Petraitis, Ph.D., Associate Dean for Social Sciences
UAA College of Arts and Sciences

Helena S. Wisniewski, Ph.D.
Vice Provost for Research and Graduate Studies
Dean, UAA Graduate School

Lawrence K. Duffy, Ph.D., Interim Dean
UAF Graduate School

April 9, 2012
Date

CONCURRENT VALIDATION OF ALASKA'S JUVENILE JUSTICE SUICIDE RISK SCREENING MEASURE

A

DISSERTATION

Presented to the Faculty

of the University of Alaska Fairbanks

and the University of Alaska Anchorage

in Partial Fulfillment of the Requirements

for the Degree of

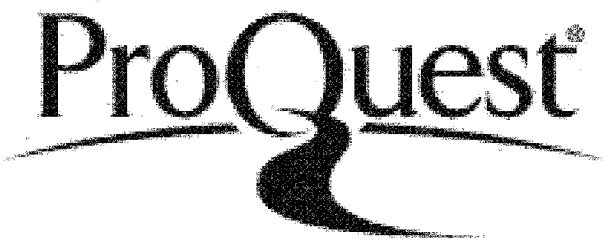
DOCTOR OF PHILOSOPHY

By

Jaymes Gonzales, M.S.

Fairbanks & Anchorage, Alaska

May 2012



ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

Abstract

Incarcerated youth face elevated rates of mental health problems and are at greater risk for suicide. The Alaska Division of Juvenile Justice (AKDJJ) uses the Mental Health/Suicide Screening (MHSS) measure to screen incoming youth for mental health problems and current suicide risk. This research examined the concurrent validity of the MHSS, exploring the relationships of the MHSS with the Beck Depression Inventory 2nd Edition (BDI-II; Beck, Steer, & Brown, 1996) and a measure of current suicidal ideation, the Positive and Negative Suicidal Ideation Inventory (PANSI; Osman, Guiterrez, Kopper, Barrios, & Chiros, 1998b). Statistically significant correlations were found between the MHSS, BDI-II, and negative ideation subscale of the PANSI; however, the effect sizes were not large enough to suggest concurrent validation within the study sample or to advise the continued use of the MHSS as a suicide risk measure. Future research directions and practical implications are provided.

Table of Contents

Page

Page

Page

List of Tables

Page

List of Appendices

Acknowledgments

First and foremost, I would like to thank my amazing wife, Linda, for showing me more support, love, and patience than any one person deserves. I have had a tremendous amount of help on this research project; however, I could not have done it without you. My children Leighan, Jay-ci, and Vienna are brightly shining lights in my life and have supported me in this endeavor in ways they do not even know.

My committee chair, Dr. Robert Boeckmann, has been an outstanding mentor, approaching his role with a skilled balance of forbearance and direction. You have fostered my growth as a professional, knowing when to step in and make suggestions or improvements and when to let me learn on my own. I appreciate all that you have done for me on this dissertation. My committee members, Dr. Patricia Sandberg, Dr. Vivian Gonzalez, and Dr. James Allen, have each contributed a great deal to my graduate education and to this research. Thank you for your individual and unique influence on me and my dissertation.

Finally, thank you to the McLaughlin Youth Center staff, most notably Barbara Henjum, for embracing this project from start to finish and ensuring that the pragmatic hurdles were minimized.

Chapter 1 Introduction and Significance of the Present Research

Overview

This research was conducted in response to a request from the Alaska Division of Juvenile Justice (AKDJJ) to conduct an empirical examination of their suicide risk assessment process. This evaluation entailed working with a specific site within the AKDJJ, the McLaughlin Youth Center (MYC) in Anchorage, Alaska. The focus of the study was a quantitative assessment of the AKDJJ's suicide risk screening tool, the Mental Health/Suicide Screening instrument (MHSS). The community partner, the AKDJJ, requested this evaluation to ensure that the assignment of suicide watch levels (i.e., standard, low, and high) were adequate within their youth facilities. This request was in response to research (Hayes, 2004) that identified priorities for providing better suicide risk screening within juvenile justice facilities nationwide.

The juvenile justice system in the United States can be broadly defined as the agencies and institutions that are concerned with delinquent youth and whose primary responsibility is handling juvenile offenders (Roberts, 2004). *Juvenile delinquency* is a generic term applied to many diverse forms of antisocial behaviors by a minor, with most states defining it as the violation of state laws committed by a youth who has not yet reached adult age (Roberts, 2004). Demographic data indicate that the number of delinquent youth detained by juvenile courts in the United States increased from 247,100 in 1985 to 364,600 in 2007 (Puzzanchera & Kang, 2010). The number of detained ethnic minority youth also increased, from 84,100 in 1985 to 159,900 in 2007 (Puzzanchera &

Kang, 2010). Finally, regarding gender, the juvenile justice caseload for boys increased by 13% and for girls 14% between 1995 and 2004 (Stahl, 2008).

The AKDJJ recorded 6,172 felony and misdemeanor referrals between 2003 and 2007 (Applied Survey Research, 2008). When referred youth are placed in an Alaskan detention facility, they participate in a comprehensive assessment that includes a clinical interview, various clinical measures, and the collection of a variety of collateral information. As part of this comprehensive assessment, the MHSS is used to determine basic mental health information, provide a preliminary assessment of an individual's suicide risk, and assist in assigning suicide watch levels within the facility. Higher scores on the MHSS can lead to additional assessment by mental health staff and assignment to a higher level of suicide watch. The MHSS is administered via interview format, with staff asking each question and recording youths' answers on the form. The MHSS appears to be face-valid and a useful tool for identifying risk and determining appropriate watch levels; however, to date it has not been carefully validated. The MHSS was created by AKDJJ clinical staff and was not developed using psychometric standards common to published and widely used instruments.

Youth processed by the AKDJJ are one of the most at-risk groups for suicide. In the United States, suicide is the third leading cause of death among individuals age 10 to 24, with approximately 4,600 deaths per year (Centers for Disease Control and Prevention, 2007). Adjudicated youth are 5 times more likely to engage in suicidal behaviors than youth in the general population (Farand, Chagnon, Renaud, & Rivard, 2004). Given the high risk for suicide in an adjudicated population, an examination of the

validity of the MHSS is of significant importance. In addition, there is no research on potential gender differences in how the MHSS assesses suicide risk among adjudicated youth. Out of concern for potential gender differences, the AKDJJ administration wanted to determine if there are differences in how the MHSS assesses suicide risk among male and female adjudicated youth.

Significance of the Present Research

Research has identified that adequate screening for suicide risk within the juvenile justice system in the United States is lacking (Hayes, 2004). Although the AKDJJ is part of a growing number of juvenile justice divisions nationwide that specifically conduct a suicide risk assessment as part of their admission process, currently there is no empirical evidence to suggest whether the tool used in this screening is effective. The goal of this research was to assist the AKDJJ with evaluating and improving their admission process by evaluating the extent to which they are providing valid and unbiased suicide risk screening. In order to meet this goal, this study evaluated the MHSS and provided suggestions for improvement in suicide risk screening in order to protect youth served by the AKDJJ.

Purposes of the Study

The treatment philosophy of youth detention facilities in Alaska and the principles of restorative justice include tenets that relate to care for the offender. In seeking to provide appropriate care for youth offenders, MYC's administration was interested in determining the extent that the MHSS is a valid screening measure for suicide risk.

As no prior empirical studies have determined the validity of the MHSS instrument, examination of its concurrent validity by testing its relationship with psychometrically sound measures of similar constructs was warranted. Therefore this study examined the concurrent validity of the MHSS by using age-appropriate self-report measures of depression and suicidal ideation. The overall purpose of the present research was to assist the AKDJJ staff with evaluation and improvement efforts regarding their suicide risk assessment process. This study was developed in collaboration with the AKDJJ management staff. The researcher and juvenile justice personnel met on several occasions to identify the state of Alaska's needs concerning adequate suicide risk assessment within its Division of Juvenile Justice facilities. The research questions for this study are shown in Table 1. A more detailed presentation of design and methodology is found in Chapter 3.

Table 1

Research Questions

1.	To what extent does the MHSS show concurrent validity as a screening measure of suicide risk in adjudicated juveniles?
2.	Does the MHSS appear to perform differently by gender? Specifically, does gender moderate the relation between the MHSS and BDI-II and the MHSS and PANSI?

This study focused on assessing the concurrent validity of the MHSS instrument, with the goal of examining the efficacy of the screening tool in assigning suicide watch levels within Alaska's youth detention facilities. The results have direct implications for

juvenile justice in Alaska, namely providing evidence of the extent of the validity of the MHSS.

Chapter 2 Literature Review and Research Hypotheses

Literature Review

Overview. This literature review begins by presenting relevant demographic data on United States and Alaskan youth. Subsections include rates of suicide among general population and adjudicated youth, risk and protective factors for suicide, mental illness among adjudicated youth, and an overview of juvenile detention in Alaska. Following these, the assessment of risk factors for suicide, suicidal ideation, and suicidal behaviors among adjudicated youth are presented. The review concludes with a general discussion on validity and a specific description of concurrent validity.

Youth demographics and risk factors.

Demographics of United States youth. The United States has seen a notable growth in the number of persons under the age of 18, with a population increase of 2.6% from 2000 to 2010 (United States Census Bureau, 2010). The juvenile population in the United States is diverse. In 2009, 68.4% of juveniles were identified as White, 14.3% Black, 4.1% Asian, 0.9% American Indian/Alaska Native, 0.2% Native Hawaiian and Other Pacific Islander, and 7.7% as "some other race" (United States Census Bureau, 2009). "Hispanic" is defined by the United States Census Bureau as an ethnicity as opposed to race. Therefore, although 21% of the youth in the United States were identified as having Hispanic or Latino origin, these youth were identified under the racial categories presented above instead of falling under a unique "Hispanic" or "Latino" ethnic category (United States Census Bureau, 2009).

Demographics of Alaska youth. Currently, persons under 18 years of age represent over one-fourth of the population in Alaska (187,378 or 26.4% of the state's 710,231 total population; United States Census Bureau, 2011). Alaska's youth population is also ethnically diverse. The most current census data indicate that among Alaskans age 19 and under, 59% are White, 4% Black, 4% Asian, 10% Alaska Native/American Indian, 5% Hispanic, and <1% Native Hawaiian and Pacific Islander. The remainder fall into the categories "some other race" and "two or more races" (United States Census Bureau, 2010).

Suicide rates among general population youth. Youth suicide has been described as the most urgent and least understood issue facing contemporary professionals who work with adolescents (Walsh & Eggert, 2007). Globally, suicide among 15-to-19-year-olds is one of the top five causes of death (World Health Organization, 2000). Most countries have reported a rise in suicide rates among 15-to 24-year-olds, with western nations reporting the highest increases (Soronoff, Dalgliesh, & Kosky, 2005). Suicide rates in the United States have tripled since the middle of the last century among 15-to-19 year-olds (Berman, Jobes, & Silverman, 2006). As the third leading cause of death among adolescents in the United States, approximately 4,600 adolescent lives are lost to suicide each year (Centers for Disease Control and Prevention, 2007).

Suicide rates for youth in America are a significant issue affecting both males and females of all age groups and ethnicities. The Centers for Disease Control and Prevention (CDC) Youth Risk Behavior Surveillance (YRBS) samples public and private schools in all 50 states and examines six priority health-risk behaviors among youth and young

adults. Data from the YRBS are reported for White, Black, Hispanic, and "Other." The "Other" group is comprised of Alaska Native, American Indian, Asian, Native Hawaiian, Pacific Islander, and multi-race youth; therefore, it is not possible to discern risk behavior rates for any specific group within this "Other" category.

According to the 2009 YRBS (Center for Disease Control and Prevention, 2010), 13.8% of students ages 10 to 24 seriously considered attempting suicide, whereas 6.3% of these students had attempted suicide one or more times within the 12 months preceding the survey. The YRBS also found that nearly twice as many females attempted suicide (8.1%) as males (4.6%). When examined by gender and ethnicity, Hispanic females had the highest attempt rate (11.1%), followed by Black females (10.4%), and White females (6.5%). For males, the highest attempt rate was among Black males (5.4%), followed by Hispanic males (5.1%), and White males (3.8%). When examined by grade level, suicide attempt rates were highest during 9th grade (7.3%) and 10th grade (6.9%) and then began to decline during 11th grade (6.3%) and 12th grade (4.2%). In the 12 months that preceded the YRBS survey administration, 1.9% of students nationwide had made a suicide attempt resulting in injury, overdose, or poisoning that required medical attention. Of those attempters, more females (2.3%) than males (1.6%) and more 9th graders (2.1%) than 12th graders (1.2%) required medical attention (Centers for Disease Control and Prevention, 2010).

Suicide in Alaska. High suicide rates are a prominent and ongoing concern for the state of Alaska. In 2007, Alaska ranked highest among the 50 states with a rate of 21.8 suicide deaths per 100,000, more than double the United States average of 11.5 per

100,000 (United States Department of Health and Human Services, 2010). Among racial/ethnic groups in the state, Alaska Native individuals have the highest suicide completion rates (Alaska Health and Social Services, Statewide Suicide Prevention Council, 2010). Between 2004 and 2008, the Alaska Native suicide completion rate was 2.2 times that of Caucasian individuals (40.9 per 100,000 versus 18.5 per 100,000 respectively; Alaska Health and Social Services, Statewide Suicide Prevention Council, 2010). These results among Alaska Native individuals are consistent with findings by the World Health Organization (2000) that suicide rates tend to be higher among those of indigenous populations versus those of non-indigenous populations.

Men in Alaska commit suicide at much higher numbers than women; between 2004 and 2008, 81% (599) of suicides were completed by males (Alaska Health and Social Services, Statewide Suicide Prevention Council, 2010). Alaska Native males between the age of 20 to 29 have the highest rates of suicide among any other group in the state, with a rate of 150.2 per 100,000 (Alaska Health and Social Services, Statewide Suicide Prevention Council, 2010). Alaska Native teens are much more likely than non-Alaska Native teens to commit suicide. Between 2001 and 2005, the suicide rate for Alaska Native adolescents was 6 times the rate of non-Native adolescents (110 per 100,000 versus 20 per 100,000 respectively; Alaska Health and Social Services, Statewide Suicide Prevention Council, 2005).

Clearly, suicide is a significant problem among all Alaskans, particularly among Alaska Native individuals. Most troubling, suicide continues to take the lives of Alaska

Native teenagers at startling rates. Therefore, it is paramount that the Alaska Juvenile Justice system use a suicide risk screening tool with a high degree of validity.

Suicide among adjudicated youth. Adjudicated youth face a risk for suicide that is notably elevated compared to that of their peers in the general population. Whereas suicide was the third leading cause of death among general population youth, in 2004, suicide was the most common cause of death among adjudicated adolescents (Sickmund, 2007). Gallagher and Dorbin (2006a) found the suicide rate in juvenile detention centers to be 21.9 per 100,000 versus 7.9 per 100,000 in the general population. Risk of suicide for youth involved in either the juvenile justice or child welfare system was found to be as much as five times that of general population youth (Farand et al., 2004).

Adolescents who report a history of suicidal behavior upon admission to a juvenile justice facility are at higher risk for suicide during their incarceration (Penn, Esposito, Schaeffer, Fritz, & Spirito, 2003). In one study of adjudicated youth, 51% of the sample reported contemplating suicide within the past 12 months versus 22% among a community sample of peers (Corcoran & Graham, 2002). Gretton and Clift (2011) found that 14% of boys and 30% of girls in their sample of adjudicated youth experienced clinically significant suicidal ideation levels. In a sample of newly detained adjudicated youth studied by Abram et al. (2008), approximately 10% reported thoughts about killing themselves in the past 10 months, and 11% had attempted suicide at least once in the past.

Prior suicidal ideation and attempts strongly influence adjudicated youth's current thoughts about suicide and suicide attempts (Winfree & Jiang, 2010). Langhinrichsen-

Rohling and Lamis (2008) found that suicide proneness among adjudicated adolescents was significantly associated with a history positive for suicidal ideation and suicide attempts. Evidence also exists that adjudication in childhood is associated with elevated suicide risk in adulthood. Among young adults with a history of juvenile adjudication, 10% of males and 20% of females reported suicide attempts in adulthood (Corneau & Lanctot, 2004). Likewise, Chavira, Accurso, Garland, and Hough (2010) found lifetime suicide attempt rates of 20% among youth engaged in public sector services such as juvenile justice.

Risk and protective factors. Research on suicide across all age groups reveals that it is a complexly determined behavior. Presently, there are several factors known to influence suicidal ideation, behaviors, attempts, and completion among adolescents. Guitierrez and Osman (2008) describe the research on suicide risk factors as a "somewhat dizzying array of research findings" (p. 13-14) and conclude that risk factors for suicide can be grouped into psychological disorders, individual variables, and interpersonal variables. Specific risk factors identified for youth suicide include:

- a history of previous suicide attempts (Berman et al., 2006; Fergusson, Beautrais, & Horwood, 2003; Guitierrez & Osman, 2008; Hayes, 2004; Sofronoff et al., 2005; Spirito, Valeri, Boergers, & Donaldson, 2003; Walsh & Eggert, 2007; Wasserman & McReynolds, 2006);
- the presence of mental disorders, especially depression (Berman et al., 2006; Kirkcaldy, Eysenck, & Siefen, 2004; Sofronoff et al., 2005; Testa &

Steinberg, 2010; Thompson, Mazza, Herting, Randell, & Eggert, 2005; Nock & Kessler, 2006; Tuisku et al., 2006; Wasserman & McReynolds, 2006);

- substance abuse (Sofronoff et al., 2005; Thompson et al., 2005; Walsh & Eggert, 2007; World Health Organization, 2000);
- impulsive behaviors and poor impulse control (Berman et al., 2006; Rohde, Seeley, & Mace, 1997);
- eating disorder diagnoses (Fennig & Hadas, 2010);
- poor self-esteem (Fergusson et al., 2003);
- poor or lack of coping skills (Chagnon, 2007; Cole, 1989; Piquet & Wagner, 2003; Rohde et al., 1997);
- poor problem-solving skills and less confidence in problem-solving ability (Piquet & Wagner, 2003; Sofronoff et al., 2005);
- life stressors (Gould, Greenberg, Velting, & Shaffer, 2003; Rohde et al., 1997; Sofronoff et al., 2005);
- emotional distress (Walsh & Eggert, 2007);
- feelings of hopelessness (Spirito et al., 2003; Thompson et al., 2005);
- family history of suicide (Berman et al., 2006; Gould et al., 2003; World Health Organization, 2000);
- family distress, dysfunction, and discord (Sofronoff et al., 2005, Spirito et al., 2003; Thompson et al., 2005);
- physical or verbal abuse within the family (World Health Organization, 2000);
- sexual abuse (Brown, Cohen, Johnson, & Smailes, 1999; Gould et al., 2003);

- parental depression and parental substance use (Berman et al., 2006; Sofronoff et al., 2005; World Health Organization, 2000);
- interpersonal distress, conflict, and loss (Piquet & Wagner, 2003);
- access to firearms (Gould et al., 2003);
- witnessing or experiencing violence (Brown et al., 1999);
- academic difficulties (Walsh & Eggert, 2007);
- gay, lesbian, or bisexual sexual orientation (American Academy of Child and Adolescent Psychiatry, 2000; Pinhey & Millman, 2004; Russell & Joyner, 2001); and
- the presence of only a few or no protective factors (Chew, Osseck, Raygor, Eldridge-Houser, & Cox, 2010).

Regarding mental health problems, mood disorders are the most common diagnoses among suicidal adolescents (Berman et al., 2006). Sofronoff et al. (2005) conclude that "adolescents who attempt suicide are far more likely to have a history of depressive illness than adolescents who do not attempt suicide" (p. 33). Adolescents who reported a history of previous suicide attempts were more depressed than those without a previous attempt history (Wichstrom & Rossow, 2002). Substance use and younger age of first use are associated with elevated risk for suicidal behavior. The earlier the age of first use of illicit substances in boys and of cigarette smoking, alcohol use, and illicit substances in girls was found to increase suicidal behavior risk factors (Cho, Hallfors, & Iritani, 2007). Finally, reflecting the influence of peers on adolescents, youth who knew of friends who attempted or completed suicide were more likely to attempt suicide

themselves (Liu, 2006; Portzky, Audenaert, & van Heeringen, 2009). Researchers have suggested that ethnic minority youth in the United States are affected by suicide risk factors that Caucasian youth may not experience, such as acculturative stress, oppression, and racial discrimination (Canino & Roberts, 2001; Gutierrez & Osman, 2008). Additionally, ethnic minority youth may experience stigma about mental health difficulties and may be distrustful or apprehensive about mental health services, stemming from historical abuse, lack of familiarity with mental health systems, and negative experiences with professionals who lack cultural competency (Goldston et al., 2008).

In addition to the myriad risk factors for youth suicide, a multitude of protective factors helps insulate youth from suicide. Gutierrez and Osman (2008) define protective factors as:

> those supportive resources (e.g., structural or functional variables that act as direct, moderating or mediating factors) that serve as buffers for, or safeguards against (a) adolescent suicide-related behaviors or (b) direct and significant risk factors, such as depression and hopelessness, for suicidal behavior. (p. 22)

Research has shown that suicidal ideation and suicidal behaviors are mitigated by the following:

- a greater repertoire of problem solving and coping skills (Chagnon, 2007; Cole, 1989; Gutierrez & Osman, 2008; Piquet & Wagner, 2003; Walsh & Eggert, 2007; World Health Organization, 2000);

- social supports such as friends, family members, teachers, school counselors, church personnel, and other positive relationships (Chew et al., 2010; Gutierrez & Osman, 2008; Sharaf, Thompson, & Walsh, 2009; World Health Organization, 2000);
- self-efficacy (Gutierrez & Osman, 2008; Walsh & Eggert, 2007);
- positive self-esteem and self-confidence (Chew et al., 2010; Fergusson et al., 2003; Gutierrez & Osman, 2008; Sharaf et al., 2009; World Health Organization, 2000);
- positive life events (Wetzler et al., 1996);
- strong relationships with family members (World Health Organization, 2000)
- family cohesiveness (Gould et al., 2003; Walsh & Eggert, 2007); and
- minimal or no risk factors (Chew et al., 2010)

Walsh and Eggert (2007) also suggest that education for teenagers and their parents about suicide risk may serve as an effective preventative measure against suicidal behaviors.

There are indications that differences in suicidal behaviors exist between youth who are adjudicated and those in the general population. Adjudicated youth experience rates of suicidal behavior that are greater than those found among youth in the general population (Putininš, 2005) and are more likely to present with levels of psychological distress that are on par with psychiatric inpatient youth (Rohde et al., 1997; Sanislow, Grilo, Fehon, Axelrod, & McGlashan, 2003). Not only were adjudicated adolescents found to have higher suicide attempt rates, but also they tended to rely on more violent suicide methods than general population youth (Penn et al., 2003). Lastly, suicide

attempts by incarcerated youth tended to be more impulsive than those of general population youth (Langhinrichsen-Rohling & Lamis, 2008).

The presence or absence of a given risk or protective factor is not inherently sufficient to predict suicide; rather, suicide is a complex and dynamic issue. Possessing high numbers of developmental assets, such as positive peer relationships and high self-esteem, while having a minimal number of risk factors considerably reduces the likelihood of adolescents engaging in suicide (Chew et al., 2010). Proper suicide risk screening tools that approach suicidal risk as a complex and dynamic phenomenon, may help clinicians and other relevant staff assess factors that put an adolescent at high risk for suicide, allowing them to take affirmative measures to reduce the likelihood of suicide. Finally, appropriate suicide risk screening is especially important in juvenile justice settings, where research indicates that youth are at greater risk for suicidal behaviors than youth in the general population.

Mental illness among adjudicated youth. Appropriate and effective screening of mental health problems and suicide risk behavior among adjudicated youth are of crucial importance. Research has shown this population to have elevated rates of mental disorders, that are commonly undiagnosed (Domalanta, Risser, Roberts, & Risser, 2003). Teplin, Abram, McClelland, Dulcan, and Mericle (2002) found that nearly 60% of males and 70% of females in juvenile detention suffered from a mental health disorder, not including conduct disorder. More recently, Gretton and Clift (2011) reported that 92% of males and 100% of females in their study of adjudicated youth met the criteria for at least one mental health disorder.

Teplin et al. (2002) found that among adjudicated males, the most frequent mental health disorders (not including conduct disorder and oppositional-defiant disorder) were attention deficit/hyperactivity disorder (ADHD; 16.6%), major depression (13%), and separation anxiety disorder (12.9%). The most frequent mental disorders among adjudicated females (not including conduct disorder) were major depression (21.6%), ADHD (21.4%), and separation anxiety disorder (18.6%; Teplin et al., 2002). Substance abuse, sexual abuse, exposure to violence, and symptoms of depression and anxiety are prevalent among adjudicated youth, with rates being higher for females in all categories except physical abuse (Gretton & Clift, 2011). Wasserman, McReynolds, Schwalbe, Keating, and Jones (2010) corroborate prior research, with findings that rates of mental health disorders and suicidality are much higher in youth detention and correctional settings.

A history of depression or other mental illness is a primary risk factor of youth suicide (Centers for Disease Control and Prevention, 2009). The American Academy of Child and Adolescent Psychiatry (2000) reported that mood and anxiety disorders increase the risk for suicide in both boys and girls. Specifically by gender, aggressiveness increased the risk for suicide for boys and panic attacks increased the risk for suicide for girls (American Academy of Child and Adolescent Psychiatry, 2000). Youth are also at increased risk of attempting suicide if the combination of depression and disruptive behavior disorders or the combination of depression and substance abuse are present (Sofronoff et al., 2005). Elevated rates of depression are commonplace among adjudicated youth and are associated with suicide proneness (Langhinrichsen-Rohling &

Lamis, 2008), recent suicide attempts (Abram et al., 2008), and an overall increase in suicide risk (Chavira et al., 2010).

Stouthamer-Loeber and Loeber (2002) found that one-third of the boys in juvenile court in their study's sample had been diagnosed with a disruptive behavior disorder by age 13, with two-thirds having documented behavior problems for at least 5 years prior. Nearly half of the persistent offenders in the study's sample had already developed serious delinquent behaviors by the age of 12; however, less than half had ever received help from mental health professionals or school personnel (Stouthamer-Loeber & Loeber, 2002). Contributing to the link between disruptive behavior disorders and juvenile delinquency in boys, Pardini, Obradavic, and Loeber (2006) have associated conduct problems, interpersonal callousness, and inattention with future development of delinquent behaviors.

As indicated above, rates of mental disorders, most notably depression, and substance use disorders represent significant challenges faced by adjudicated youth and the juvenile justice system as a whole. Wasserman et al. (2003) state "little systematic information is available concerning best practices for the clinical management of justice system youth with mental health concerns" (p. 752). Given the combination of general risk factors and mental disorders experienced by adjudicated youth, it is not surprising that they are at greater risk for suicide.

Nationwide, the entire juvenile justice system faces a potential crisis, as a large portion of adjudicated youth suffers from mental health issues while a uniform and structured approach to identifying and effectively treating these individuals is notably

lacking. Wasserman et al. (2003) provide the following six recommendations for addressing mental illness in adjudicated youth:

1) timely and accurate screening for emergent risk;

2) timely and accurate screening for mental health service needs;

3) comprehensive mental health assessment that is inclusive of multiple sources, such as family history and external mental health records;

4) assessment prior to community re-entry;

5) periodic reassessment on a regular basis throughout the time a youth is adjudicated; and

6) staff training on mental health and youth's risk to self and others.

The juvenile justice system is presented with youth who suffer from elevated rates of mental illness and who are at significant risk for suicidal behaviors, making the accurate and timely screening and assessment of these issues a prime concern. The trends within the juvenile justice system of ethnic minority population growth, and the high rate of mental illness highlight the need for initial assessment, including suicide risk screening, that is valid and culturally appropriate (Wasserman & McReynolds, 2006).

Juvenile detention in Alaska. Given that the AKDJJ was the community partner for this research project, and its adjudicated youth the focus of this study, an overview of Alaska's juvenile justice system is relevant. In the 2010 fiscal year, Alaska had 3,101 unduplicated referrals of youth age 19 and under to the Division of Juvenile Justice. When examined by ethnicity, 43% of the statewide juvenile justice referrals were White, 32% Alaska Native/American Indian, 9% Black, 3% Hispanic, 2 % Asian, 3% Native

Hawaiian/Pacific Islander, >1% "Other," and 6% reported "Multiracial" as their identified ethnicity (Alaska Health & Social Services, Division of Juvenile Justice, 2010a). Consistent with facilities throughout the country, many of the youth adjudicated within the AKDJJ facilities suffer from mental illness. In 2010, 43% of Alaska's adjudicated youth had at least one Diagnostic and Statistical Manual, Fourth Edition (*DSM-IV*; American Psychiatric Association, 1994) Axis I diagnosis (Alaska Health & Social Services, Division of Juvenile Justice, 2010b). Of those with a diagnosis, 5.7% had one diagnosis, 9.5% had two diagnoses, and 28% had three diagnoses (Alaska Health & Social Services, Division of Juvenile Justice, 2010b). Among those with an Axis I diagnosis, 21% of youth had a co-occurring disorder (a mental disorder accompanied by a substance-related disorder (Alaska Health & Social Services, Division of Juvenile Justice, 2010b). When examined by number of juvenile justice referrals, 27% of youth with an Axis I diagnosis had 1 to 3 referrals; 28% had 4 to 6 referrals; 26% had 7 to 10 referrals; and 20% had 11 or more referrals (Alaska Health & Social Services, Division of Juvenile Justice, 2010b). Despite elevated risk for suicide and higher rates of mental illness among adjudicated youth, MYC has had only three completed suicides within the past 20 years, all occurring in the 1980s (B. Henjum, personal communication, July 17, 2009).

The AKDJJ oversees eight youth facilities across the state, located in Anchorage (MYC, 160 beds); Bethel (Bethel Youth Facility, 18 beds); Fairbanks (Fairbanks Youth Facility, 40 beds); Juneau (Johnson Youth Center, 28 beds); Kenai (Kenai Peninsula Youth Facility, 10 beds); Ketchikan (Ketchikan Regional Youth Facility, 10 beds); Palmer (Mat-Su Youth Facility, 15 beds); and Nome (Nome Youth Facility, 14 beds).

Many of these facilities serve dual functions as detention centers and mental health treatment centers. Alaska's juvenile detention treatment programs utilize a family-inclusive treatment team approach "specifically designed to intervene in entrenched delinquent behavior, to build value systems reflective of the local culture, and restore victims and the community to the fullest degree possible" (Alaska Health and Social Services, Division of Juvenile Justice, 2008, para. 2). MYC in Anchorage is the largest of the AKDJJ youth facilities. At MYC, 60 beds are utilized for detention purposes and 100 beds for treatment. MYC also provides specific, specialized programs for older teens, gang-affiliated teens, females, sex offenders, and youth who pose a significant risk to themselves or others.

> MYC utilizes a restorative justice model that emphasizes three goals: identifying the obligation created by [a] juvenile's offense and ensuring that he/she is held responsible for it (accountability), returning the offender to the community competent to interact in a successful prosocial manner (competence), and ensuring that the community is not further injured by the juvenile's future delinquent behavior (public safety). (Roberts, 2004, pp. 585-586)

Restorative justice is based on the assumption of joint involvement between victims, offenders, and the community and is rooted in the belief that justice is best served when each of these crucial components receives balanced attention and gains tangible benefits from interactions with the justice system (Roberts, 2004). Inherent in restorative justice is the notion of juvenile repentance to a society that is open and willing to accept, forgive, and reintegrate the individual as an accepted member. MYC is interested in ensuring

adherence to the major tenets of restorative justice as they pertain to the admission process, namely, that MYC provides an effective assessment that directly involves youth, has their best interest in mind, and provides them with balanced attention and a beneficial justice system interaction.

Assessing suicide risk and protective factors, suicidal ideation, and suicidal behaviors in youth. The preceding literature review focused on pertinent demographic data, research and theory on adolescent suicide, and an overview of youth facilities in Alaska and of the specific facility that was the focus of this research. What follows is a review of the assessment of adolescent suicide. Specifically, the next subsections focus on the assessment of suicidal risk factors within juvenile justice facilities (including a review of data regarding completed suicide), suicidal risk factors that differ between youth and adults, and means for measuring adolescent suicidal risk.

Assessment of risk factors among adjudicated youth. Suicidal behaviors and suicide completion among adjudicated youth has received relatively little attention (Hayes, 2004). Gallagher and Dorbin (2006a) found detention center suicide rates to be 3 times higher than among the general population of adolescents. Each year, an estimated 11,000 adjudicated youth engage in over 17,000 incidents of suicidal behavior (Wasserman & McReynolds, 2006). Self-reports indicate that 2 to 3% of adjudicated youth will attempt suicide every 4 weeks (Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002).

In one of the most comprehensive investigations to date within the United States, Hayes' (2004) seminal work examined 79 suicides that had occurred in public and private

juvenile facilities. These facilities were delineated categorically into detention centers, training school/secure facilities, residential treatment centers, and reception/diagnostic centers. Hayes found that of the completed suicides, 79.7% were by males and 20.3% were by females. The mean age of youth completing suicide was 15.7, with an age range of 12 to 20; over 70% of victims was between the ages of 15 and 17 (Hayes, 2004). Over 65% of the suicides in all types of facilities that Hayes reviewed occurred between admission and the first 4 months, with only 4% occurring within the first 24 hours of confinement. However, all of the suicides that occurred in detention centers occurred during the first 4 months of confinement, with over 40% occurring in the first 72 hours (Hayes, 2004). Hayes also found that 74.3% of victims had a history of mental illness, and 65.3% had been suffering from depression at the time of their deaths. A history of sexual abuse was found among 38.6% of victims (Hayes, 2004). A history of suicidal behavior was found in 90% of victims (71 of 79), with suicide attempts representing the most common behavior (45.5%), followed by suicidal ideation and/or threat (30.9%), and suicidal gesture and/or self-harm (23.6%; Hayes, 2004). Hayes found that only 55% of detention center victims had known histories of suicidal behavior, possibly indicating ineffective screening processes.

In addition to screening for present and historic suicidal behaviors, another key component in minimizing suicide risk is adequate mental health assessment. Hayes (2004) discovered that within detention facilities, only 34.5% of suicide victims had received mental health assessments prior to their death. Over half (51.7%) of all detention facility suicides occurred within the first 6 days of confinement (Hayes, 2004),

highlighting the importance of immediate mental health assessment. Related to this, Hayes found that less than half (48.2%) of the detention centers maintained an intake screening process to identify suicide risk. Hayes revealed that staff training was also significantly lacking; only 37.9% of all facilities that experienced a suicide reported that they provided annual suicide prevention training to direct-care staff.

Regarding within-facility confinement, 50% of all victims had been on room confinement status at the time of suicide and 62% of victims had a history of room confinement (Hayes, 2004). Further, Hayes found that 85% of those who committed suicide while on room confinement status did so during "waking hours" (7:00 a.m. to 9:00 p.m.) or during times that it could be reasonably expected that a greater degree of supervision would occur versus times when youth were sleeping. Only 16.5% of youth had been on suicide watch status at the time of their deaths, and almost half of these youth were last observed in excess of 15 minutes prior to their suicide (Hayes, 2004). As this illustrates, more frequent observation could prevent such youth from engaging in suicidal behaviors or completing suicide.

As Hayes (2004) has shown, considerable issues related to adequate screening, assessment, observation, and staff training persist in contemporary juvenile justice settings. Hayes highlighted that both suicide attempts and suicide completions are at problematic levels for adjudicated males and females, reflecting the need for high quality assessment that is equally appropriate to both genders regarding suicide risk screening.

Although Hayes' (2004) work represents one of the most comprehensive examinations of suicide within United States juvenile justice facilities to date, it is not the

only research on the matter. Gallagher and Dorbin (2005) found that of 3,690 juvenile justice facilities in the United States, nearly 60% reported that they screen all youth for suicide risk, 25% reported that they only screen youth who display or communicate suicide risk, and 16% reported that they do not screen any youth. In addition to lapses in suicide risk screening, several facility-level characteristics have been found to impact adjudicated youth's suicidal behaviors. Serious suicide attempts were found to be significantly associated with facilities that have larger populations, use mechanical restraints, and have onsite mental health care (Gallagher & Dorbin, 2006b).

Depression, hopelessness, and impulsivity in adolescent suicide risk.

Appropriate screening for suicide risk must consider factors related to suicide that are unique to adolescents. Beck, Steer, Kovacs, and Garrison (1985) found that degree of hopelessness among inpatient adults was a stronger indicator of suicide risk than depression. However, a body of literature suggests unique and important differences regarding correlates of suicide for adolescents. In early research on differences between adults and adolescents, Allberg and Chu (1990) indicated that one of the key symptoms found in adolescents who attempt or complete suicide is depression. Subsequent research has similarly found that major depression was predictive of suicidal ideation and suicide attempts for adolescents (Fergusson, Woodward, & Horwood, 2000; Kelly, Lynch, Donovan, & Clark, 2001). Second to a history of previous suicide attempts, affective illness is the most powerful predictor of adolescent suicidal behavior (Sofronoff et al., 2005). Nrugham, Larson, and Sund (2008) reported that depressed mood was the strongest indicator of suicidal acts in adolescence. Suicidal behaviors and non-suicidal

self-harm were found to be significant risk outcomes for depressed adolescents (Wilkinson, Kelvin, Roberts, Dubicka, & Goodyear, 2011). Relatedly, Prinstein et al. (2008) found that higher levels of adolescent-reported depression symptoms were associated with weaker suicidal ideation remission.

Evidence is sparse that hopelessness may be associated with suicidal ideation and suicidal behaviors in adolescence; however, the association between hopelessness and other cognitive constructs such as suicidal ideation or attribution style and stress interaction may be equivocal among adolescents (Hankin, Abamson, & Siler, 2001). More recent findings by Nrugham et al. (2008) suggested that hopelessness is a core cognitive symptom of depression, is not itself a direct predictor of suicide, and appears to function differently among suicidal adolescents versus suicidal adults. Harris and Lennings (1993) found that hopelessness was not an effective indicator of suicide risk among adolescents. Bridge, Goldstein, and Brent (2006) noted that once depression has been controlled for, the impact of hopelessness on adolescent suicidal behaviors is attenuated.

Cole (1989) found depression among general population youth as well as juvenile detainees to be a more important indicator of suicide risk for both groups than hopelessness. Kempton and Forehand (1992) reviewed suicide attempts among adjudicated 11-to-18-year-olds, concluding that hopelessness did not aid in explaining suicidal intent. Likewise, Sanislow et al. (2003) examined adjudicated and psychiatric inpatient youth, finding that among both population groups, depression was associated with suicide risk and hopelessness was not.

In addition to hopelessness, researchers have examined the role of impulsiveness in suicidal ideation and behaviors. Recently Nock et al. (2009) found that globally, depression was the strongest predictor of suicidal ideation for adults in developed countries. However, anxiety and impulse-control problems were more predictive of suicidal ideation progressing to suicide planning or a suicide attempt. These findings compliment earlier findings by Nock et al. (2008) that both depressed mood and impulsivity play an important role in suicide processes, with impulse control disorders the stronger predictor of suicidal behaviors for adults in developing countries.

As with depression, research has illuminated differences regarding the role of impulsivity between adults and adolescents. Recently, Javdani, Sadeh, and Verona (2011) concluded that depression represents a risk factor for suicidal ideation, whereas impulsivity may be the primary factor in youth's engagement in self-injury or suicide attempts. This recent development in the understanding of adolescent suicide suggests that depression may play a primary role when it comes to thinking about suicide; but a propensity for behaving impulsively may ultimately determine whether youth progress from suicidal ideation to suicidal behaviors, including attempts.

In sum, current research illuminates notable differences between the suicidal thoughts and behaviors of adults versus those of adolescents. Further, there is a robust relationship between affective disorders, including depression, and adolescent suicidal thinking and behaviors (Verona & Javdani, 2011). The literature on adolescent suicide suggests that depression is a primary contributor to suicidal behaviors and suicide completion, with hopelessness as a possible contributing factor subsumed under the

larger construct of depression. Shahar, Bareket, Rudd, and Joiner (2006) proposed that depression, hopelessness, and suicidal ideation may fall under a single construct of depressive syndrome in severely suicidal adolescents. Thus, although the empirical evidence clearly supports depression as a major contributor to suicidal ideation and suicidal behaviors in adolescence, the current literature remains mixed, at best, regarding the role of hopelessness in adolescent suicide. Recent developments in adolescent suicide research have proposed that impulsivity may also contribute to suicidal behaviors. Clearly, empirical advances in the understanding of adolescent suicide paint a picture of suicidal ideation and suicide behaviors as complex and dynamic processes.

Measuring suicide risk in youth. Prinstein, Nock, Spirito, and Grapentine (2001) indicated that adolescents may be more likely to disclose suicidal ideation and suicide risk behaviors by completing self-report measures versus providing answers during a face-to-face interview. They also suggest that the best means of assessing adolescent suicidal ideation involves the use of multiple measures that include several informants and several modalities of assessment (Prinstein et al., 2001). Research also has found that parental collateral information during assessment contributed minimal or no new information; however, parent-child agreement was high for reports of past-year and lifetime suicide attempts (Ko, Wasserman, McReynolds, & Katz, 2004). Thus research suggests that a variety of measures, with a self-report format proving most useful, that are administered to youth directly, yield the most telling results regarding suicidal ideation and suicide risk behavior. Collateral information from parents may confirm a history of suicide attempts; however, youth are likely to be as forthcoming and as accurate as their

parents in disclosing their suicide attempt history. Echoing the recommendations of Prinstein et al. (2001), Guitierrez and Osman (2008) provide the following summary on measuring adolescent suicide risk:

- the setting in which suicide risk assessment takes place determines how to best structure such risk assessment;
- both risk and protective factors should be assessed simultaneously; and
- adolescents' self-reports are valid, reliable, and appropriate for assessing suicide risk.

As part of their current screening for suicide risk, MYC utilizes a number of the above recommendations, including the use of self-report measures and the use of myriad assessment modalities. In order to examine the concurrent validity of the MHSS, MYC added to its admission process a measure of severity of depression, the BDI-II (Beck, Steer, & Brown, 1996), and a measure of current suicidal ideation, the PANSI (Osman et al., 1998b). MYC management staff requested concurrent measures that were applicable to their population and brief in length so as to not add undue burden to admission staff and youth undergoing admission. The following is a brief overview of each instrument and rational for the inclusion of each instrument in this study. A more comprehensive description and review of the psychometric properties of each instrument can be found in the "Measures" section of Chapter 3.

Mental Health/Suicide Screening. The MHSS instrument (see Appendix A) has been in use by the AKDJJ for several decades as a screening measure for mental health problems and current suicide risk. It was originally developed by juvenile justice clinical

staff, with consultation and guidance on subsequent revisions provided by professionals considered by juvenile justice administrators to be experts in adolescent suicide. It has undergone multiple revisions leading to its most current version. The MHSS is divided into two sections, a four-item mental health section and a ten-item suicide section. The suicide section contains two subsections assessing suicidal ideation correlates (items 1 through 5, e.g., "Have you been spending more time alone, away from family and friends, than usual?") and direct suicide risk factors (items 6 through 10, e.g., "Do you have a plan to kill yourself?"). Rather than sum scores, the MHSS results in suicide watch categories of standard, low, or high (see Appendix B). The MHSS was designed to screen for significant risk factors (e.g., history of suicide attempts, current suicidal thinking, and current suicide plan). However, the measure was designed by clinical professionals who did not use currently accepted factor analytic scale development techniques to determine which questions should be included, the nature of its overall factor structure, or its internal reliability.

Beck Depression Inventory 2nd Edition. The BDI-II is a 21-item self-report measure of severity of depression in individuals age 13 and above (Beck et al., 1996). The BDI-II uses sum scoring, with 0 to 13 considered *minimal*, 14 to 19 *mild*, 20 to 28 *moderate,* and 29 to 63 *severe* (Beck et al., 1996). The BDI-II was selected as a concurrent measure for this study based on the above review of literature, that identified depression as a prominent adolescent suicidal risk factor. Additionally, evidence for the validity of the BDI-II has been established by numerous studies (e.g., Beck et al., 1996; Osman, Barrios, Guittierrez, Williams, & Bailey, 2008; VanVoorhis & Blumentritt,

2007). Research results suggest that the BDI-II is an effective measure of depression for youth in the general population (Osman et al., 2008) and in clinical settings (Krefetz, Steer, Gulab, & Beck, 2002; Osman et al., 2004; Steer, Kumar, Ranieri, & Beck, 1998). It has also been shown to predict self-harm and suicidal behaviors in young adult prisoners (Perry & Gilbody, 2009). Finally, the age applicability, brief administration time, and self-report nature of the BDI-II made it an ideal concurrent measure based on the requirements of the community partner.

Positive and Negative Suicide Ideation Inventory. The PANSI is a 14-item self-report measure of risk and protective factors related to suicidal behavior in individuals age 14 and above (Osman, Guiterrez, Kopper, Barrios, & Chiros, 1998b). The PANSI contains two subscales, negative ideation (PANSI-NSI) and positive ideation (PANSI-PI). Scoring for the PANSI consists of mean scores; mean cut-off scores equal to or greater than 1.63 for the PANSI-NSI and equal to or less than 3.33 for the PANSI-PI are each suggestive of elevated suicide risk (Osman et al., 2002). The PANSI was selected as a concurrent measure for this study because it is a validated self-report measure of suicidal risk for adolescents (Osman et al., 2002) and has a brief administration time.

The above measures of depression and suicide risk were added to the MYC admission process in order to evaluate the concurrent validity of their suicide risk screening tool, the MHSS. Both the BDI-II and PANSI are empirically validated as measures of depression and ideation in youth and have been used in prior concurrent validation studies (e.g., Meehan, Peirson, & Fridjhon, 2007; Osmen et al, 2003). What

follows is an overview of the general concept of validity and then a specific review of concurrent validity as defined by social science experts and as utilized in this study.

Validity. The term *validity* refers to the general principle of a test measuring what it is said to measure. According to Thorndike (2005), validity involves "the degree to which test scores provide information that is relevant to the inferences that are to be made from them" (p. 110). As described by Cronbach and Meehl (1955), the American Psychological Association convened the Committee on Psychological Tests from 1950-1954, resulting in the differentiation of four validity categories that are commonly known today: predictive, content, construct, and concurrent validity.

Predictive validity is defined as the correlation of one measure with the performance on another measure or criterion at some point in the future (Kazdin, 2003). With content validity, there is evidence that the content of items that make up a measure reflect the construct or domain of interest (Kazdin, 2003). Construct validity refers to the accuracy with which an instrument operationalizes the construct or underlying theory that is being measured (Davey, 2006). Concurrent validity procedures are used to compare a measure to one or more other measures that are purported to assess a similar or related construct (or constructs) and for which evidence of their validity has already been established (Aiken & Groth-Marnat, 2006; Thorndike, 2005). Concurrent validity is often utilized to determine evidence for the validity of a new measure. Gravetter and Forzano (2003) describe concurrent validity as comparing scores from a new measure to those obtained from a more established measure. Convergent validity describes the extent to

which measures assess related or similar constructs and is considered a form of concurrent validity (Kazdin, 2003).

These validity sub-groupings were intended to clarify aspects of validity. However, Kline (2005) points out that "while this was a convenient way to divide test score validation strategies into pedagogically meaningful groupings, it also had the unintended consequence that the groupings became separate validities" (p. 287). At present, validity is generally accepted as a singular concept, containing within it a variety of different categorical labels that describe various means for providing evidence of validity (Kline, 2005; Landy, 1986; Lewshe, 1985). Different descriptive labels may be helpful in conveying the specific type of analytical undertaking utilized to provide evidence for validity, but the labels do not serve as an indication of separate validity types.

In this current study, the method used to assess the validity of the MHSS was concurrent validity. Adding to the description provided earlier, Kazdin (2003) defines concurrent validity as "the correlation of a measure with performance on another measure or criterion at the same point in time" (p. 359). Concurrent validity measures the level of agreement between the results of one measure and that of one or more additional measures that have already been shown to have an acceptable level of validity. Malterer, Lilienfeld, Neumann, and Newman (2010) refer to concurrent validity as a direct assessment of the extent to which similar measures are correlated. As described by Clark-Carter (2004), "a measure has concurrent validity if it produces a similar result to that of an existing measure that is taken around the same time" (p. 31). Gavin (2008) likewise

notes that "when the criterion measure is collected at the same time as the measure being validated the goal is to establish concurrent validity" (p.16).

Specifically referring to measures of suicidal behavior, Goldston (2000) described that "instruments are evaluated with regard to the concurrent validity or the degree to which they correlate with other indices of suicidal behavior and related constructs (at the same point in time)" (p. 18). Thus, a key requirement of concurrent validity is that all of the comparison measures are administered at the same time to the same individuals.

Concurrent validity is commonly used when comparing a measure with little or no prior empirical validation against one or more measures of a similar construct that have undergone empirical examination and validation. In developing the PANSI, Osman et al. (1998b) described examining the measure's concurrent validity by correlating it with other measures of suicide risk. Additional studies on the PANSI describe a similar approach of examining the concurrent validity of the measure by comparing it to other suicide risk measures (e.g., Muehlenkamp, Gutierrez, Osman, & Barrios, 2005; Osman et al., 2002; Osman et al., 2003). Numerous studies examined the concurrent validity of the BDI-II by comparing correlations with other measures of similar construct (e.g., Beck, Steer, & Ranieri, 1988; Osman et al., 2004; Palmer & Binks, 2008; Storch, Roberti, & Roth, 2004).

Research Questions and Hypotheses

The AKDJJ was interested in evaluating and improving its admission process, specifically its measure used to screen for suicide risk, the MHSS. In light of this, the present study sought to examine the concurrent validity of the MHSS tool. The research

questions for this study were developed in collaboration with the AKDJJ and reflect information that was desired and specifically requested by MYC management.

Research questions. The two research questions developed for this study were:

1. To what extent does the MHSS tool show concurrent validity as a screening measure of suicide risk behavior in adjudicated juveniles? For this first research question, the MHSS suicide watch levels (standard, low, and high) will be correlated with the BDI-II and PANSI scores.
2. Does the MHSS appear to perform differently by gender? Specifically, does gender moderate the relation between the MHSS and BDI-II and the MHSS and PANSI?

This study had three main hypotheses related to the first research question:

1. The MHSS suicide watch level will be positively correlated with the BDI-II;
2. The MHSS suicide watch level will be positively correlated with the PANSI-NSI; and
3. The MHSS suicide watch level will be negatively correlated with the PANSI - PI.

MYC administrative staff were interested in determining whether the MHSS assesses males differently than females. Specifically, MYC administrative staff were concerned with gender fairness and invested in ensuring best practices in suicidal risk screening. Therefore, an examination of the moderating effect of gender was conducted as well. MYC administrative staff had no indication that one gender tended to engage in suicidal behaviors at a higher rate than the other within the facility. Likewise, there was

no indication from MYC administrative staff that the MHSS was currently performing differently by gender. Thus no hypotheses were developed for the second research question.

Although this study's research questions were collaboratively developed to meet MYC management needs regarding the MHSS, the dataset provided by MYC contained additional data worthy of exploratory examination. Therefore, three post-hoc exploratory analyses were undertaken as well (see the Results section of Chapter 3).

In addition to the MHSS, MYC admission staff utilize collateral information (e.g., information from caregivers, treatment providers, and prior juvenile justice records) in order to assign youth to a suicide watch level within the facility. This collateral information can vary greatly from youth to youth. Because it is not possible to quantify what additional information admission staff use in determining suicide watch levels, data analyses only focused on the watch level determined by following the MHSS scoring guidelines (described in the "Measures" section of Chapter 3).

Chapter 3 Mental Health/Suicide Screening Concurrent Validation Study

Research Design

The concurrent validity of the MHSS was examined to determine the extent to which the MHSS is a valid indicator of suicide risk among adjudicated youth. MYC has used the MHSS for many years as part of its admission process, in order to ensure that youth are provided with appropriate levels of care. In an effort to ensure best practices, MYC recently added the BDI-II-II and the PANSI to their admission procedures, offering the opportunity to examine the concurrent validity of the MHSS. De-identified archival MHSS, BDI-II, and PANSI data from 200 youth were provided to the author by the MYC administration in order to conduct the current study. These data were collected between October 2008 and April 2009. This research was approved by the University of Alaska Anchorage Institutional Review Board (IRB; see Appendix D). The MYC review board did not review this study, as the nature of the research did not require review according to MYC review board policies; however, it was approved by the MYC superintendent (see Appendix E for letter of support).

Methodology

Participants. The provided dataset included intake information for 200 adjudicated youth who were admitted to MYC between October 2008 and April 2009. The adjudicated youth included 154 males and 46 females, ranging in age from 13 to 19 ($M = 16.43$, $SD = 1.37$; Table 2 shows a summary of demographics).

Table 2

Summary of Participant Demographics

Demographics	*n*	Percent of sample
Gender:		
Male	154	77
Female	46	23
Age:		
13	3	1.5
14	17	8.5
15	32	16
16	39	19.5
17	65	32.5
18	36	18
19	8	4
Ethnicity:		
African American	39	19.5
Alaska Native/American Indian	51	25.5
Asian	2	1
Caucasian	64	32
Hispanic	2	1
Pacific Islander	15	7.5
Multi-race	25	12.5
Unknown/Missing	2	1

Data collection procedures. This study consisted of the analysis of archival data. As originally conceived, data collection for this study was to be conducted by the principal researcher. The UAA IRB members expressed concern over permitting a doctoral student to independently conduct suicide risk screenings. Based on this concern, the UAA IRB provided approval for this study on the condition that MYC staff administer the MHSS, BDI-II, and PANSI and subsequently provide the results as de-identified archival data. The MYC superintendent agreed to this requirement.

MYC staff administered a comprehensive battery of admission questions and the above-described measures to all referred youth from October 2008 to April 2009. According to Alaska statutes, youth are considered wards of the state of Alaska at the time they are brought to MYC; thus, the MYC superintendent provided consent for participation in the admission process and for the use of the obtained data for this research. Given MYC's expressed desire to examine the validity of the MHSS screening measure, the BDI-II and PANSI were added to the facility's admission procedure based on the recommendations of this researcher.

In addition to the MHSS (and BDI-II and PANSI added for this research), MYC collects extensive information from each youth, and any applicable collateral sources (such as parents or guardians), regarding personal information, biopsychosocial history, current physical and mental health, and other pertinent information. Per MYC policy, youth are provided with an overview of the admission assessment process and are informed of what will happen during each step in the process. Youth undergoing admission into MYC are initially searched for weapons and contraband material, are photographed and finger-printed, and then are asked the admission battery questions. MYC admission assessments are typically completed within 24 hours of a youth's arrival.

Archival data transfer. After including the BDI-II and PANSI in the admission procedure from October 2008 to April 2009, MYC staff created a data archive. Identifying information was removed and archival data were provided to the principal researcher in an electronic database file in May, 2009. This database file contained participant age, ethnicity, number of prior juvenile justice admissions, suicide watch level

placement as assigned by admitting staff, and responses on the MHSS, BDI-II, and PANSI. A prior agreement between the principal researcher and MYC management stipulated that the principal researcher would take ownership of the electronic database once it had been physically provided, and the principal researcher would be responsible for secure storage of the database (via password protected electronic storage medium) under the requirements of the UAA IRB.

Measures. As part of their standard admission assessment, the AKDJJ utilizes the MHSS. For the purpose of this study, MYC added the BDI-II and the PANSI to the admission process for a period spanning from October 2008 through April 2009. Data for each of these measures, as well as de-identified demographic, admission date, and prior admission information was provided by MYC via electronic spreadsheet.

Mental Health/Suicide Screening. The MHSS instrument (see Appendix A) was developed by the state of Alaska to screen for mental health and suicide risk factors. It contains 14 items; four specific to risk factors related to mental health and 10 regarding risk factors for suicide. The MHSS is administered via interview. The MHSS item content includes both correlates of suicide risk (i.e., suicidal ideation) and risk behaviors (i.e., prior suicide attempts). The MHSS includes scoring guidelines (see Appendix B) to assist the admitting staff member in assigning a suicide watch level within MYC.

The MHSS is used during every admission to assist with assigning suicide watch levels and to identify the need for a more thorough assessment of suicide risk. Presently no validity or reliability data exist for the MHSS. As it is currently used, the MHSS includes guidelines for determining suicide watch levels (presented below in summary

form; see Appendix B for the complete guidelines that are included as part of the MHSS hardcopy used in practice); however, final determination of such assignment is made by the admitting clinician. Practically speaking, the MHSS provides important screening information and recommended suicide watch levels to clinicians. The scoring guidelines for the instrument are used in conjunction with additional admission assessment information (such as clinical history) and observations to make a final determination regarding suicide watch levels. Thus, the guidelines are not used in a purely actuarial fashion (i.e., use of scoring rules to determine a suicide watch level); rather, they are used to support clinical decision making. Appendix C outlines the suicide watch level definitions that are used within AKDJJ facilities.

In addition to screening for suicide risk and assisting with assigning suicide watch levels, the MHSS is used to aid in assessing need for mental health services. The MHSS includes a section for the admitting staff member to note clinical observations and impressions. The tool is administered by admission staff, who verbally administer the MHSS questions and record the answers given. Items on the MHSS are answered with either "yes" or "no" and are used to answer the following decision rules (which are included on the MHSS and presented verbatim below), based on item endorsement:

1) Youth answers "no" to all of the suicide questions 1 through 10: Youth may be placed on Standard Supervision (SS) status;
2) Youth answers "yes" to any of the questions 1 through 5: May warrant placement on Suicide Level Low or High, depending on how recent, frequent, and acute the circumstances, and viewed in conjunction with other risk

factors. The more "yes" responses that the youth provides to these questions, the more likely the youth may need to be placed on Suicide Level Low or High;

3) Youth answers "yes" to any of the questions 6 through 8: The need for Suicide Level Low or High will be considered and determined by how recent, frequent, and acute the circumstances, and viewed in conjunction with other risk factors. If youth is not placed on Level Low status after answering "yes" to any of these questions, Shift Supervisor explain why in "Comments" section below. At a minimum, Suicide Level Low will be mandatory through the first 24 hours if the youth answered "yes" to any of the questions 6 through 8 and these thoughts or actions occurred within the last 30 days; and
4) Youth answers "yes" to either question 9 or 10: Mandatory Suicide Level High.

The decision rules represent an actuarial process (i.e., reliance solely on computed outcome scores versus clinical input) that provides suggested suicide watch levels. However, the final suicide watch level that a youth is placed on is determined by the admitting staff member, who may assign a different level than what the MHSS scoring guidelines suggest. Admitting staff utilize the MHSS as well as other information available at admission (e.g., clinical observations, statements by youth, and collateral information) when determining which suicide watch level to assign.

For this study, internal consistency was calculated for the full MHSS measure, for the mental health and the suicide risk sections individually, and the two suicide

subsections (suicide correlates and suicidal behaviors). The obtained Cronbach's alpha for the full 14-item MHSS measure was .48. The four-item mental health section had a Cronbach's alpha of .14 (consistent with the variation in the type of questions asked and the small number of items within the scale). For the ten suicide items, the obtained Cronbach's alpha was .44. It should be noted that given this study's concern with the validity of the MHSS as a measure of suicide risk, the internal consistency results of the 10 suicide item subsection represent central analyses. Finally, for the five-item subsections, suicidal ideation correlates (items 1 through 5) and suicide risk (items 6 through 10), Cronbach's alphas were .27 and .44, respectively.

Beck Depression Inventory 2nd Edition. The BDI-II is a 21-item self-report instrument used to measure severity of depression in adolescents (age 13 and higher) and adults (Beck et al., 1996). It is one of the most commonly used and researched measures of depression (e.g., Byrne, Baron, & Campbell, 1993; VanVoorhis & Blumentritt, 2007). The current version is the third incarnation of the measure that was originally developed by Beck, Ward, Mendelson, Mock, and Erbaugh (1961). It was revised to utilize the nine diagnostic criteria for depressive disorder as outlined in the DSM-IV (American Psychiatric Association, 1994), assessing for changes in weight, appetite, and sleep, feelings of agitation and worthlessness, difficulties with concentration, and energy loss. The time frame of reference for individuals completing the BDI-II is two weeks, consistent with DSM-IV criteria for depressive disorder.

The BDI-II has a fifth grade reading level (Grothe et al., 2005). A youth version of the Beck Depression Inventory also exists; however, the measure is only available as

part of a package with additional Beck Youth Inventories (Beck, Beck, & Jolly, 2001) and is only normed for children up to age 18. In addition to these practical limitations, Bose-Deakins and Floyd (2004) noted that the Beck Youth Inventories lack an evaluation of gender or ethnic bias and, due to limited research evidence, the use of the measures in applied treatment settings remains unsupported. In light of these limitations, the youth version of the BDI was not selected. MYC management chose to use the BDI-II, based upon the instrument measuring severity of depression, the age applicability, reading level, and ease of administration.

Osman et al. (2003) noted that depression is a risk factor related to suicidal ideation and that the BDI-II is a frequently-used instrument in studies seeking to identify individuals at risk for suicide. Items on the BDI-II are rated on a 4-point scale specific to each question. In general, a score of 0 represents an absence of negative symptoms or no change in typical functioning, whereas a score of 3 represents significant affective symptoms or notable behavioral change. Question 15, for example, examines energy loss, where a score of 0 corresponds to having as much energy as one has always had, whereas a score of 3 corresponds to a significant lack of energy. A total score is calculated, with a score of 0 to 13 considered *minimal*, 14 to 19 *mild*, 20 to 28 *moderate*, and 29 to 63 *severe* (Beck et al., 1996). The BDI-II includes a suicidal ideation question (item 9, "Suicidal thoughts or wishes") carried over verbatim from the original BDI. The BDI-II item 9 has been examined in studies of adolescents in the general population as well as in outpatient and inpatient psychiatric settings (Goldston, 2000).

Research has supported the use of the BDI-II as a measure of depression with non-clinical adolescents (Osman et al., 2008), inpatient psychiatric adolescents (Krefetz et al., 2002; Osman et al., 2004), and adolescent psychiatric outpatients (Steer et al., 1998). There is evidence that the BDI-II is valid for youth of differing ethnicities. One study utilized the BDI-II with adjudicated, inpatient, and alternate-education Mexican American youth, with results concluding that the BDI-II was psychometrically sound and clinically useful among these populations (VanVoorhis & Blumentritt, 2007). VanVoorhis and Blumentritt found significantly higher BDI-II scores within youth in juvenile detention facilities, which was consistent with previously presented literature regarding rates of depression among adjudicated youth.

Research has found internal consistency ranges from Cronbach's alpha of .87 to .94 for the BDI-II in samples of adult and adolescent clinical inpatients, adult and adolescent outpatients, college students, substance abusing adolescents, and general population adolescents (Beck et al., 1996; Coelho, Martins, & Barros, 2002; Dozois, Dobson, & Ahnberg, 1998; Groth-Marnat, 2003; Osman et al., 2008; Osman et al., 2003; Subramaniam, Harrell, Huntley, & Tracy, 2009; VanVoorhis & Blumentritt, 2007), consistent with Cronbach's alphas of .92 to .93 found during the measure's revision (Beck et al., 1996). For the present study, the BDI-II had good internal consistency (Cronbach's alpha = .90). Test-retest reliability for the BDI-II was originally reported to be .93 after one week (Beck et al., 1996). Sprinkle et al. (2002) found a total score test-retest correlation of .96 after a time period ranging from 1 to 12 days; split-half reliability coefficient was .91 during the first administration and .93 during the second.

Positive and Negative Suicide Ideation Inventory. The PANSI is a 14-item measure of risk and protective factors related to suicidal behavior (Osman et al., 1998b). Osman et al. (2003) noted that "if suicide-related behavior is conceptualized as a multidimensional construct, both protective and risk factors must be assessed simultaneously to evaluate more fully the individual's risk for suicide" (p. 495). Protective factors are considered to be positive thoughts that are opposite of thoughts that contribute to suicidal behavior, such as "During the past two weeks, including, today, how often have you felt you were in control of most situations in your life" (Osman et al., 1998b). Items are rated on a 5-point scale ranging from 1 (*none of the time)* to 5 (*most of the time*). The PANSI contains two sub-scales, the PANSI-NSI, which measures current suicidal ideation and the PANSI-PI, which measures protective factors against suicide attempts. Thus, the PANSI measures both the presence or absence of suicidal ideation and the presence or absence of positive factors in order to determine suicide risk. It offers notable utility, with its brief administration of 14 items, simple format, and rich data yield (Winters, Myers, & Proud, 2002).

Several studies demonstrate the effective use of the PANSI with a variety of populations. However, given the recentness of its initial development (1998), far less published research exists on the measure than can be found for the BDI-II. Validity of the PANSI with inpatient adolescents aged 14 to 19 was examined by Osman et al. (2002), who found evidence for concurrent validity of the measure in relation to measures of affect, hopelessness, and suicidal behaviors. Osman et al. also found that the PANSI was able to differentiate effectively between suicide attempters and controls and between

those at high risk for suicide and controls. Osman et al. (2003) administered the PANSI to adolescents aged 14 to 19 from general population and inpatient samples. Findings indicated that the PANSI is an appropriate suicide risk screening measure for youth in this age group. Muehlenkamp et al. (2005) researched the use of the PANSI among ethnic minority participants. Results indicated that the measure may not detect every culture-bound aspect of suicide, yet the factor structure and psychometric properties of the PANSI were consistent across ethnic groups. There have been two recent additions to the literature on the PANSI. The first was a psychometric evaluation of the measure among South African youth, with Meehan et al. (2007) finding evidence for its validity with their study's population. The second was the validation of a Chinese language version of the PANSI, with evidence of validity found as well (Chang, Lin, Chou, Ma, & Yang, 2009).

The PANSI has a reading grade level of 7.8 and was specifically designed for use with adolescents and adults age 14 and above (Osman et al., 2002). As on the BDI-II, individuals are asked to refer to the past two weeks when responding. Items on the PANSI-NSI subscale include questions such as "thought that your problems were so overwhelming that suicide was seen as the only option for you" and "seriously considered killing yourself because you could not live up to the expectations of other people." Items on the PANSI-PI include questions such as "felt that you were in control of most situations in your life" and "felt confident about your ability to cope with most of the problems in your life." Osman et al. (2002) provide a mean cut-off score of 1.63 for the PANSI-NSI, with mean scores at or above this cut-off suggesting increased suicide

risk. A mean cut-off score is also given for the PANSI-PI, with mean scores at or below 3.33 representing increased risk for suicide (Osman et al., 2002).

Internal consistency reliability estimates of the two subscales range from Cronbach's alpha of .91 to .96 for the PANSI-NSI and .80 to .89 for the PANSI- PI among samples of young adults, general population adolescents, and psychiatric inpatient adolescents (Muehlenkamp et al., 2005; Osman et al., 2002; Osman et al., 2003; Osman et al., 1998b). Both PANSI factor scales had somewhat lower internal consistency in the present study (PANSI-NSI Cronbach's alpha =.67, PANSI-PI Cronbach's alpha =.73) than found in the measure's initial validation and subsequent validation studies. As summarized in Table 3, the PANSI has been correlated with measures of suicidal ideation, depression, psychological distress, and hopelessness among samples of college undergraduates, ethnically diverse young adults, and psychiatric inpatient adolescents.

Table 3

Correlations Between PANSI Scales and Similar Measures

Measure	PANSI-NSI	PANSI-PI
Suicidal Probability Scale (Cull & Gill, 1982)	.59[a]	-.47[a]
Suicidal Behaviors Questionnaire (Osman et al., 2001)	.37 to .61[a,b]	-.32 to -.54[a,b]
Positive and Negative Affect Scale-Positive (Watson, Clark, & Tellegen, 1988)	-.21 to -.37[c]	.27 to .64[c]
Reasons for Living Inventory for Young Adults (Gutierrez et al., 2002)	-.21 to -.31[c]	.48 to .61[c]
Reasons for Living Inventory for Adolescents (Osman et al., 1998a)	-.34[b]	.39[b]
Beck Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974)	.26 to .56[b,c]	-.30 to -.70[b,c]

Note. Citation source: a = Osman et al., 1998b; b = Osman et al., 2002; c = Muehlenkamp et al., 2005

Data analyses. A comprehensive computer program for statistical analysis, SPSS 15.0, was used to analyze the data. Table 4 outlines the statistical procedures used to analyze each of the research questions and hypotheses. Pearson's correlation analyses (of the suicide watch levels assigned by the MHSS, the BDI-II total score, and PANSI subscale mean scores) were used to test the three hypotheses of the first research question. Spearman's rho, an appropriate non-parametric alternative to Pearson's correlation was considered for this study given that, arguably, the MHSS appears to consist of ordinal data. In real-world practice, however, the MHSS is used in more of an interval manner, as differences between levels indicate differences in risk level. Although Pearson's correlation was selected for this study, analyses were conducted for both methods, with minimal differences between the correlational results. The dependent variables for the three hypotheses of the first research question were the BDI-II final

score, PANSI-NSI final score, and PANSI-PI final score, respectively. The independent variable for each of the three hypotheses of the first research question was the level of suicide watch according to the MHSS. For the purpose of this research, all data analyses were conducted using the level of suicide watch suicide according to the MHSS scoring guidelines and not the final watch level assigned by the admitting staff member.

Table 4

Data Analysis Procedures

Dependent Variables	Independent Variables	Statistical Analyses
Research Question #1- To what extent does the MHSS tool show concurrent validity as a screening measure of suicide risk behavior in adjudicated juveniles?		
1. BDI-II mean score 2. PANSI-NSI mean score 3. PANSI-PI mean score	1. MHSS-assigned suicide watch level	Pearson's correlation
1. BDI-II Clinical Cutoff scores 2. PANSI Clinical Cutoff scores	1. MHSS-assigned suicide watch level	Pearson's chi-square tests of independence
Research Question #2- Does the MHSS appear to perform differently by gender? Specifically, does gender moderate the relation between the MHSS and BDI-II and between the MHSS and PANSI?		
1. BDI-II mean score 2. PANSI-NSI mean score 3. PANSI-PI mean score	1. Gender 2. MHSS-Assigned Suicide Watch Level 3. MHSS-Assigned Suicide Watch Level × Gender	Hierarchical moderated multiple regression (one for each of the dependent variables)

Chi-square tests of independence were conducted to determine the relationship between MHSS-assigned suicide watch level, BDI-II clinical score ranges, and PANSI clinical cutoff scores. Initially, a 3×4 chi-square between the MHSS and BDI-II, a 3×2 chi-square between the MHSS and PANSI-NSI, and a 3×2 chi-square between the MHSS and PANSI-PI were conducted. These analyses each resulted in excessive cells with expected counts less than 5 (20% of the cells and fewer being the accepted standard). The cells with unacceptably low expected counts were BDI-II minimal × MHSS suicide high, BDI-II mild × MHSS suicide high, BDI-II moderate × MHSS standard supervision, BDI-II moderate × MHSS suicide high, BDI-II severe × MHSS standard supervision, and BDI-II severe × MHSS suicide high. The three MHSS categories were then collapsed into two ("no suicide watch level assigned" and "suicide watch level assigned"), as there were too few youth placed in the highest suicide watch level ($n = 4$). The BDI-II categories were also collapsed into two ("low risk" = minimal/mild and "high risk" = moderate/severe), due to an insufficient number of youth scoring within the highest clinical range ($n = 10$). As a result of collapsing the MHSS and BDI-II categories, three 2×2 analyses were conducted. The PANSI subscales are already two-category variables.

For the second research question, three hierarchical moderated multiple regression analyses were conducted. The independent variables for the analyses were gender, MHSS-assigned suicide watch level, and an MHSS-assigned suicide watch level × gender cross-product interaction term. The dependent variables were the BDI-II, PANSI-NSI, and PANS-PI final scores respectively. Consistent with the recommendations of Cohen, Cohen, West, and Aiken (2003), the continuous variables were mean centered and

contrast coding was used for the categorical variables. A cross-product interaction term of the centered MHSS-Assigned Suicide Watch Level × Gender variable was also created. The independent variables were entered sequentially. In step 1, the centered MHSS score and contrast-coded gender variables were entered. In step 2 the suicide watch level by gender cross-product interaction variable was entered.

Data screening. In this sample, internal consistency of the instruments ranged widely, varying from excellent for the BDI-II (Cronbach's alpha of .90), to unacceptably low for the MHSS (Cronbach's alpha of .48). To test for data normality, the Shapiro-Wilk test (Shapiro & Wilk, 1965) was conducted for data from the MHSS, BDI-II, and PANSI. The results were significant, indicating that the data were skewed for each measure, except for the PANSI-PI scale.

Because of this skewness, analyses for the primary hypotheses were conducted with the original data set and with a data set in which the outliers on MHSS (assigned Suicide High level; n = 4, 0.02%) had been removed. Even with outliers removed, data remained significantly skewed. The results of adjustments were negligible, with miniscule changes to the correlations (e.g., .414 changed to .407) and no change in the significance levels of the results.

The data for the MHSS, BDI-II, and PANSI-NSI (with outliers removed from the MHSS as noted above) were transformed according to recommendations by Tabachnick and Fidell (2007), with the following consequent transformations:

- The MHSS had moderate negative skewness and was transformed using the formula NEWX=SQRT(K-X);

- The BDI-II had substantial positive skewness and was transformed using the suggested formula NEWX=LG10(X+C); and
- The PANSI-NSI was severely positively skewed, L-shaped with zero and was transformed using the formula NEWX=1/(X+C).

Transformations resulted in a slight change; however, they did not sufficiently affect the strength of the correlations to result in a meaningful difference in this study's conclusions As a result of the negligible differences in results obtained with outliers removed and MHSS, BDI-II, and PANSI-NSI data transformed, the original dataset (non-transformed and with outliers included) was used for all subsequent analyses. Table 5 outlines how the variables for each measure were coded for analysis in SPSS.

Table 5

Variable Coding

Measure	Response	Coded
MHSS	Yes	1
	No	2
	No on all 10 items = standard supervision	1
	Yes to any item 1-8 = suicide low	2
	Yes on item 9 or 10 = suicide high	3
MHSS Collapsed	No on all items = standard supervision	0
	Yes on any item 1-10	1
BDI-II	0-13 = Minimal	1
	14-19 = Mild	2
	20-28 = Moderate	3
	29-63 = Severe	4
BDI-II Collapsed	0-19 = Low risk	0
	20-63 = High risk	1
BDI-II Item 9, "Suicidal Thoughts or Wishes"	"I don't have any thoughts of killing myself."	0
	"I have thoughts of killing myself, but I would not carry them out."	1
	"I would like to kill myself."	2
	"I would like to kill myself if I had the chance."	3
PANSI-NSI	Low Risk = $M < 1.62$	0
	Elevated Risk = $M \geq 1.63$	1
PANSI-PI	Low Risk = $M > 3.34$	0
	Elevated Risk = $M \leq 3.33$	1

Results

Suicide watch placement. Of the 200 youth in this study, 187 (94%) had been placed on Standard Supervision, 10 (5%) had been placed on Suicide Level 1 (Low Supervision), and 2 (1%) had been placed on Suicide Level 2 (High Supervision) by the admitting staff member. These suicide watch level data represent staff decisions on a final placement level; all analyses in this study were conducted on the MHSS scoring guideline outcomes (a discussion of staff-assigned suicide watch level placements and how they differ from the MHSS scoring guideline outcomes is presented at the end of the "Results" section of this chapter).

Research question 1. Three hypotheses were tested to assess the concurrent validity of the MHSS:

1) The MHSS suicide watch level will be positively correlated with the BDI-II;

2) The MHSS suicide watch level will be positively correlated with the PANSI-NSI; and

3) The MHSS suicide watch level will be negatively correlated with the PANSI-PI.

Table 6 reports means, standard deviations, indicators of skew, internal consistency and scale intercorrelations for all of the instruments. The first hypothesis was supported, as MHSS suicide watch level was significantly positively correlated with the BDI-II, $r(198) = .30, p < .001$. The second hypothesis was supported, as MHSS suicide watch level was significantly positively correlated with the PANSI-NSI, $r(198) = .16, p = .012$. Both Pearson's correlations achieved statistical significance; however, they were

not adequate for establishing concurrent validity for clinical measures (see "Discussion" section). Using effect size conventions outlined for social science research by Cohen (1992), these results represent a medium effect size for the correlation between the MHSS and BDI-II, with the measures sharing only 9% of their variance. A small effect size was established for the relationship between the MHSS and PANSI-NSI, with these measures sharing only 3% of their variance. The third hypothesis was not supported, as MHSS suicide watch level was not significantly negatively correlated with the PANSI-PI, $r(198) = -.06, p = .21$.

Table 6

Descriptive Statistics, Internal Consistency, and Correlations

Measure	*M*	*SD*	Skew	α	MHSS	BDI-II	PANSI -NSI
MHSS	1.76	.47	-0.63***	.48	----		
BDI-II	9.68	9.02	1.24***	.90	.30**	----	
PANSI-NSI	1.19	.47	2.99***	.67	.16*	.41**	----
PANSI-PI	3.45	1.06	.33	.73	-.06	-.18**	-.13*

*$p < .05$. **$p < .01$. ***$p < .001$.

To supplement the correlational results and to aid in making the results more clinically interpretable, chi-square tests of independence were conducted to determine the relationship between MHSS watch level, BDI-II clinical score ranges, and PANSI clinical cutoff scores. As outlined earlier, the BDI-II clinical score ranges of 0 to 13 *minimal*, 14 to 19 *mild*, 20 to 28 *moderate*, and 29 to 63 *severe* (Beck et al., 1996) were collapsed into low risk (0 to 28) and high risk (29 to 63). The relationship between

MHSS and BDI-II was significant, $X^2(1, N = 200) = 4.32, p = .038$. This outcome represents a small effect size, $\Phi = .15$. Youth with MHSS scores resulting in a suicide watch assignment were more likely to have BDI-II scores in the high risk range as compared to those assigned to standard supervision (see Table 7). In a complementary fashion, youth assigned to standard suicide watch were more likely to have BDI-II scores in the low risk range. No significant associations were found for the chi-square analysis between the MHSS and PANSI-NSI, $X^2(1, N = 200) = 1.96, p = .16$ or the MHSS and PANSI-PI, $X^2(1, N = 200) = .351, p = .55$.

In order to quantify the degree of agreement between the collapsed MHSS and BDI-II categories, Cohen's kappa was also calculated. The result of this analysis, while achieving statistical significance, indicates poor agreement between the collapsed categories of the MHSS and BDI-II ($k = .068, p = .04$). In reviewing the results shown in Table 7, the categories MHSS Suicide Watch Supervision and BDI-II Low Risk represent the poorest agreement (as those scoring in the low risk category on the BDI-II would be expected to fall into the standard supervision category of the MHSS).

Table 7

Suicide Watch Assignment by BDI-II Risk Level

	BDI-II Low Risk		BDI-II High Risk	
	N	*% of total*	*N*	*% of total*
MHSS Standard Supervision	49	24.5	3	1.5
MHSS Suicide Watch Supervision	122	61	26	13

Research question 2. To test whether gender had a moderating effect in the relations between the MHSS, BDI-II, and PANSI, hierarchical moderated multiple regression analyses were conducted. The moderated multiple regression analyses were utilized to test association strength; this use of moderated multiple regression was not an attempt at theoretical modeling. There was no theory about which of these variables is an antecedent or a consequence variable. The MHSS-assigned suicide watch level variable was centered by subtracting the sample mean from each score, according to the recommendation provided by Cohen et al. (2003). The scatterplots between the variables were also examined to ensure that there were no curvilinear relations. Diagnostics were also conducted on how the variables were dispersed, with no indication of heteroscedacity. Contrast coding was used to code the gender variable. Contrast coding is recommended for a priori analyses (Aguinis, 2004; Cohen et al., 2003). The following contrast coding guidelines, provided by Cohen et al. (2003), were used: the sum of the contrast weights must equal 0, the sum of the products of each pair of codes must equal 0, and the difference between the value of positive weights and negative weights must equal 1.

For the first analysis, the BDI-II final score was entered as the dependent variable. Gender and MHSS-assigned suicide watch level were entered as the independent variables in the first step. The MHSS-Assigned Suicide Watch Level × Gender cross-product term was entered as the independent variable in the second step (see Table 8).

Table 8

Moderated Multiple Regression of BDI-II, MHSS, and Gender

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.09	.09***
Gender	.34	1.45	.02		
MHSS-Assigned Suicide Watch Level	5.73	1.30	.30***		
Step 2:				.09	.00
MHSS-Assigned Suicide Watch Level × Gender	.71	3.52	.02		

***$p < .001$.

The interaction was not statistically significant, $\Delta R^2 = .000$, $F(1,196) = .04$, $p = .842$, suggesting that gender has no moderating effect on the MHSS and BDI-II relation.

For the next analysis, the PANSI-NSI was entered as the dependent variable. Gender and MHSS-assigned suicide watch level were entered as the independent variables in the first step. The MHSS-Assigned Suicide Watch Level × Gender cross-product term was entered as the independent variable in the second step (see Table 9).

Table 9

Moderated Multiple Regression of PANSI-NSI, MHSS, and Gender

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.03	.03
Gender	-.03	.08	-.03		
MHSS-Assigned Suicide Watch Level	.16	.07	.16*		
Step 2:				.03	.01
MHSS-Assigned Suicide Watch Level × Gender	.24	.19	.12		

*$p < .05$.

The interaction was not statistically significant, $\Delta R^2 = .008$, $F(1,196) = 1.62, p = .204$, suggesting that gender has no moderating effect on the MHSS and PANSI-NSI relation.

For the final analysis, PANSI-PI was entered as the dependent variable. Gender and MHSS-assigned suicide watch level were entered as the independent variables in the first step. The MHSS-Assigned Suicide Watch Level × Gender cross-product term was entered as the independent variable in the second step (see Table 10).

Table 10

Moderated Multiple Regression of PANSI-PI, MHSS, and Gender

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.00	.00
Gender	-.03	.18	-.01		
MHSS-Assigned Suicide Watch Level	-.13	.16	-.06		
Step 2:				.00	.00
MHSS-Assigned Suicide Watch Level × Gender	.04	.44	.01		

The interaction was not statistically significant, $\Delta R^2 = .000$, $F(1,196) = .007, p = .934$, suggesting that gender has no moderating effect on the non-significant MHSS and PANSI-PI relation.

The effect size of each of the three moderated multiple regression analyses were in the small range. Although these results provide evidence that there is no significant difference in the obtained correlations by gender in this sample, they do not necessarily establish that the MHSS displays *equivalent* measurement properties for males and females. In other words, although gender was not shown to moderate the relation between

the MHSS, BDI-II, and PANSI, these results do not provide evidence that the MHSS, BDI-II, or PANSI are measuring suicide risk similarly for males and females.

Exploratory analyses. Three exploratory analyses were conducted with the MHSS (see Table 11).

Table 11

Exploratory Analyses

Exploratory Analysis #1- Does ethnicity moderate the relation between the MHSS and BDI-II and between the MHSS and PANSI?		
Dependent Variable	Independent Variable	Statistical Analyses
1. BDI-II final score 2. PANSI-NSI final score 3. PANSI-PI final score	1. MHSS-assigned suicide watch level 2. Alaska Native or Caucasian self-reported participant ethnicity 3. MHSS-assigned suicide watch level × Ethnicity	Hierarchical moderated multiple regression (one for each dependent variable)
Exploratory Analysis #2- Correlations between the BDI-II suicidal ideation item (item 9) and the suicide risk behavior items of the MHSS (items 6-10)		
Dependent Variable	Independent Variable	Statistical Analyses
1. BDI-II suicidal ideation item (item 9)	1. MHSS suicidal ideation and suicidal behavior items (items 6-10)	Pearson's correlation
Exploratory Analysis #3- Correlations between the summed total score of the MHSS, BDI-II, PANSI-NSI, and PANSI-PI		
Dependent Variable	Independent Variable	Statistical Analyses
1. BDI-II mean score 2. PANSI-NSI mean score 3. PANSI-PI mean score	1. MHSS summed score (sum of items 1-10)	Pearson's correlation

In light of the elevated risk factors facing Alaska Native youth that were noted in the introduction, the first exploratory analyses examined whether Alaska Native and Caucasian ethnic identity had a moderating effect on the relations between the MHSS, BDI-II, and PANSI. The analyses were conducted with only Alaska Native (n = 51) and Caucasian (n = 64) youth. Dummy coding was used for the ethnicity variable. Dummy coding is used to render categorical information into quantitative form, when the reference groups (in this case ethnicity) is unambiguous, and when the analysis represents a post hoc examination (Aguinis, 2004; Cohen et al., 2003). Alaska Native youth were coded as 0 and Caucasian youth as 1. The MHSS-assigned suicide watch level variable was centered by subtracting the sample mean from each score, based on the recommendation provided by Cohen et al. (2003).

To examine whether ethnicity has a moderating effect in the relations between the MHSS, BDI-II, and PANSI, hierarchical moderated multiple regression analyses were conducted. For the first analysis, BDI-II final score was entered as the dependent variable. Ethnicity and MHSS-assigned suicide watch level were entered as the independent variables in the first step. The MHSS-Assigned Suicide Watch Level × Ethnicity cross-product term was entered as the independent variable in the second step (see Table 12).

Table 12

Moderated Multiple Regression of BDI-II, MHSS, and Ethnicity

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.07	.07
Ethnicity	-1.22	1.54	-.07		
MHSS-Assigned Suicide Watch Level	4.51	1.73	.24**		
Step 2:				.07	.01
MHSS-Assigned Suicide Watch Level × Ethnicity	3.62	3.76	.16		

**p =.01.

The interaction was not statistically significant, ΔR^2 = .008, $F(1,111)$ = .925, p = .338, suggesting that ethnicity has no moderating effect on the MHSS and BDI-II relation.

For the next analysis, the PANSI-NSI was entered as the dependent variable. Ethnicity and MHSS-assigned suicide watch level were entered as the independent variables in the first step. The MHSS-Assigned Suicide Watch Level × Ethnicity cross-product term was entered as the independent variable in the second step (see Table 13).

Table 13

Moderated Multiple Regression of PANSI-NSI, MHSS, and Ethnicity

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.03	.03
Ethnicity	-.14	.08	-.17		
MHSS-Assigned Suicide Watch Level	.03	.09	.03		
Step 2:				.05	.02
MHSS-Assigned Suicide Watch Level × Ethnicity	.28	.19	.25		

The interaction was not statistically significant, $\Delta R^2 = .019$, $F(1,111) = 2.27$, $p = .134$, suggesting that ethnicity has no moderating effect on the MHSS and PANSI-NSI relation.

For the final analysis, PANSI-PI was entered as the dependent variable. Ethnicity and MHSS-assigned suicide watch level were entered as the independent variables in the first step. The MHSS-Assigned Suicide Watch Level × Ethnicity cross-product term was entered as the independent variable in the second step (see Table 14).

Table 14

Moderated Multiple Regression of PANSI-PI, MHSS, and Ethnicity

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.09	.09**
Ethnicity	.54	.16	.30***		
MHSS-Assigned Suicide Watch Level	-.06	.18	-.03		
Step 2:				.09	.00
MHSS-Assigned Suicide Watch Level × Ethnicity	-.01	.4	-.01		

**$p < .01$. ***$p < .001$.

The interaction was not statistically significant, $\Delta R^2 = .000$, $F(1,111) = .001$, $p = .972$, suggesting that ethnicity has no moderating effect on the non-significant MHSS and PANSI-PI relation.

As with the gender analyses, the effect size of each of the three moderated multiple regression ethnicity analyses were in the small range. Likewise, although these results provide evidence that ethnicity did not have a moderating effect, they do not necessarily establish that the MHSS displays *equivalent* measurement properties for Alaska Native and Caucasian youth (i.e., the results do not provide evidence that the MHSS is measuring suicide risk similarly for Alaska Native and Caucasian youth).

The second exploratory analyses examined Pearson's correlations between the BDI-II suicidal ideation item (item 9) and each of the suicide risk behavior items of the MHSS (items 6 to 10). Research has found moderate positive correlations between the BDI-II item 9 and other measures of suicide risk (e.g., Smyth & Maclachlan, 2005; Steer, Kumar, & Beck, 1993; Valtonen et al., 2009). The BDI-II suicidal ideation item ("Suicidal thoughts or wishes") was most strongly correlated with MHSS item 6 ("Have you ever thought about killing yourself?"), resulting in a medium effect size, $r(197) = .31$, $p = .001$. Of the remaining MHSS suicide items that relate to suicide risk behavior, items 7 ("Have you ever tried to kill yourself?"), 9 ("Are you thinking about killing or hurting yourself now?", and 10 ("Do you have a plan to kill yourself? Do you have a plan to hurt yourself?") were significantly correlated with the BDI-II suicidal ideation item. However, only small correlations (from .14 to .18) were found. MHSS item 8 ("Have you recently harmed yourself or engaged in risky behavior [cut, scratched, burned, punched walls, etc.]?") was not significantly correlated with the BDI-II suicide item.

The third exploratory analyses calculated Pearson's correlations between the summed total score of the MHSS suicide items (items 1 to 10), BDI-II, PANSI-NSI, and PANSI-PI. Unlike with the PANSI and BDI-II, MHSS scores are not summed for a total by intake staff at MYC. The MHSS suicide questions consist of common correlates or associates with suicide risk (items 1 to 5; see Appendix A) and more direct, current suicide risk (items 6 to 10). On par with the BDI-II, where higher scores signify elevated severity, responses to the MHSS suicide questions were coded 0 for no and 1` for yes. Because all of the MHSS questions endorsed with "yes" indicate the presence of suicidal

ideation or a suicidal risk factor, no reverse coding was necessary. Pearson's correlations were calculated for the sum of the entire MHSS suicide question set (items 1 to 10) and for the sum of the direct suicide risk item sub-set (items 6 to 10). The entire MHSS suicide question set was significantly correlated with the BDI-II, $r(198) = .40, p = .001$, as was the suicide risk behavior sub-set, $r(198) = .33, p = .001$. It is likely that the slightly lower, albeit still significant correlation between the BDI-II and suicide risk sub-set reflects similarities between the more general questions of the BDI-II and the broader range of questions included in the full set of ten MHSS suicide questions.

A significant correlation was also found between the PANSI-NSI and the full MHSS suicide question set, $r(198) = .29, p = .001$, as well as the MHSS suicidal suicide risk sub-set, $r(198) = .38, p = .001$. The correlation between the PANSI-NSI and the MHSS suicide risk sub-set is consistent with other findings in this study and is likely reflective of the PANSI being designed specifically to measure suicidal ideation. Neither the full MHSS suicide question set nor the suicide risk sub-set was significantly negatively correlated with the PANSI-PI, $r(198) = -.07, p = .16$ and $r(198) = -.08, p = .14$, respectively. The results suggest that using a summed score of the MHSS suicidal risk items is more strongly correlated with the BDI-II and the PANSI-NSI than suicide watch level scores produced by following the MHSS scoring guidelines.

One final outcome of this study is worth noting. In reviewing the observed frequencies of suicide watch levels, a large discrepancy was found between the MHSS-assigned suicide watch level recommendations and the actual suicide watch levels youth were placed on by admission staff (see Table 15). The recommended suicide watch level

based on the MHSS guidelines tended to be at a higher level than the watch level admission staff ultimately assigned. This suggests that the MHSS scoring guidelines yield a more cautious watch level than admission staff in determining suicide watch level placement.

Table 15

Suicide Watch Level Assigned by Staff Versus MHSS-Derived Suicide Watch Level

Suicide Watch Level Assignment	Standard Supervision	Suicide Level 1 Supervision (Low)	Suicide Level 2 Supervision (High)
Suicide Level Determined by Clinical Staff (n = 199)	187 (94%)	10 (5%)	2 (1%)
Suicide Level Determined by MHSS (n = 200)	52 (26%)	144 (72%)	4 (2%)

Chapter 4 Discussion

This study sought to examine the concurrent validity of the Alaska Division of Juvenile Justice's (AKDJJ) suicide risk screening and suicide watch level tool, the MHSS. The two major research questions of this study focused on whether the MHSS was adequately screening for suicide risk and whether it was doing so for both males and females.

Regarding the first research question, three hypotheses were formulated. The first hypothesis examined the correlation between the MHSS and the BDI-II. As indicated in the previous chapter, a statistically significant medium correlation was found between the MHSS suicide watch level and BDI-II. The second hypothesis looked at the correlation between the MHSS and the PANSI-NSI. A statistically significant but small correlation was found between the MHSS and PANSI-NSI. These correlations were intended to provide evidence for the concurrent validity of the MHSS, and indeed the MHSS, BDI-II, and PANSI-NSI correlations were statistically significant in the expected directions. However, the obtained values were too small to suggest evidence for concurrent validity of the MHSS.

The third hypothesis predicted to find a negative correlation between the MHSS and the PANSI-PI. Instead, no significant correlation was found. The MHSS is a suicide risk screening measure, and the PANSI-PI is a measure of protective factors against suicidal behavior; although these seem to be conceptual opposites, the MHSS and PANSI-PI likely represent differing constructs within the suicidal behavior continuum and not polar ends of such behavior. The PANSI-PI does not simply represent questions

worded in opposition to those that may be considered to correspond with suicidal ideation. For example, the PANSI-PI scale includes questions such as "[Have you] felt in control of most situations in your life?" and "[Have you] felt confident about your ability to cope with most of the problems in your life?" It appears, therefore, that the PANSI-PI is addressing positive protective factors that are not contained, in an opposite manner, within the MHSS items.

The chi-square results indicated that youth assigned to a suicide watch level based on MHSS scores were more likely to have BDI-II scores in the high risk range. There was no relationship between suicide watch level and either of the PANSI subscales. The outcome of the chi-square analyses complement the obtained correlations presented above, namely that the BDI-II appears more closely related to MHSS-assigned suicide watch level than the PANSI. However, the chi-square result showing a relation between the BDI-II and MHSS is not particularly strong. Cohen's kappa results augment the chi-square results by demonstrating a poor relationship between the collapsed MHSS and BDI-II categories. Additionally, it remains unclear how clinicians are actually using the information provided by the MHSS when determining a final suicide watch level. Given these limitations, there is strong evidence against the use of the MHSS by MYC admitting staff. The non-significant chi-square results for the PANSI are inconsistent with the correlation and moderated regression results, which found a significant positive relationship between the MHSS and PANSI-NSI. This discrepancy is likely due to the loss of statistical power or sensitivity resulting when the MHSS and PANSI-NSI

outcomes were collapsed into two clinical categories and variance in the measures was restricted to a more limited range.

Based on the dataset available for this study, the MHSS does not appear to provide a valid assessment of suicide risk for the population of adjudicated youth in MYC, and its clinical use is not supported. Although the relatively large sample size of this study produced statistically significant correlations of the MHSS with the BDI-II and PANSI, effect sizes were small, and the proportion of shared variance of the MHSS with validated measures of depression and suicide risk were negligible. In addition, the poor reliability of the MHSS suggests it possesses limited reliable variance to correlate with validated measures of similar constructs. Although a reliable measure may not be valid, a valid measure cannot be unreliable, and this is the case with the MHSS.

The second research question examined the role of gender as a potential moderator in the relations of the MHSS with the BDI-II and of the MHSS with the PANSI. The moderated multiple regression results suggest that gender does not moderate the relation of the MHSS with the BDI-II and PANSI. Previous research has likewise found that the strength of association between constructs such as depression, suicidality, and hopelessness do not vary by gender (Bryson & Pilon, 1984; Byrne et al., 1993; Osman et al., 2002; Spirito et al., 1993). Osman et al. (2002) noted that research regarding gender differences for various aspects of suicidal behavior remains mixed, with variation appearing to be primarily related to differences in how males and females express or present correlates of suicidal behavior (e.g., depression, hopelessness, history of attempts) rather than differences in suicide-related behaviors. It is worth reiterating that

although the moderated multiple regression results indicated no significant difference by gender in this sample, it cannot be asserted that the MHSS has equivalent measurement properties for males and females (i.e., the results do not provide evidence that the MHSS measures suicide risk in a similar manner for males and females). The majority of youth yielded MHSS scoring guideline outcomes resulting in Standard (n = 52) and Suicide Level Low (n = 144) watch status placement. The small number of youth placed on the highest suicide watch level (n = 4) and small number of youth scoring in the highest depression range on the BDI-II (n = 10) were limiting factors in adequately testing the validity of the MHSS. One possible means of overcoming this particular issue in the future would be a larger sample collected over a longer period of time.

Exploratory Analyses

The first exploratory analyses examined whether Alaska Native or Caucasian ethnic identity had a moderating effect on the relations of the MHSS and the BDI-II and the MHSS and the PANSI. The results suggest that ethnicity had no moderating effect. However, this research did not establish even partial measurement equivalence (Byrne, Shavelson, & Muthén, 1989) for the BDI-II, PANSI, or MHSS between Alaska Native and Caucasian youth. The moderation analyses suggest that for this sample, the MHSS, BDI-II, and PANSI relations are similar for Caucasian and Alaska Native youth samples; however, the results show the MHSS is not valid for either ethnic group.

The second exploratory analyses compared the BDI-II suicidal ideation question (item 9) with the suicide risk questions of the MHSS (items 6 through 10). All items of the MHSS, except item 8, were significantly correlated. However, only item 6 of the

MHSS achieved a medium effect size. This result may be due to the fact that the MHSS item 6 wording ("Have you ever thought about killing yourself?") is similar to the BDI-II item 9 wording (which ranges from "I don't have any thoughts of killing myself" to "I would kill myself if I had the chance"). The other significantly correlated MHSS items (items 7, 9, and 10) refer directly to current or recent suicidal ideation and suicide planning. It is not surprising that these items would correlate with BDI-II item 9, given that they are closely aligned conceptually. Nor is it unusual that MHSS item 8 was not significantly correlated with the suicide item of the BDI-II, given that this MHSS item references self-harm and risky behavior engagement and not direct suicidal ideation.

The last exploratory analyses were undertaken to determine whether the use of a total score, the result of a summation of the MHSS suicide items, would yield stronger correlations with the BDI-II and PANSI than were found using the scoring guideline criteria. Currently this is not how the MHSS is used in practice, and thus summing scores remains a theoretical proposal. In practice, the MHSS is supposed to assist in determining suicide watch level that youth are assigned to, yielding a result via scoring guideline criteria based on the number and type of question endorsed with a "yes" answer. The MHSS does not provide a valid assessment of suicide risk with this study's sample; however, the findings indicate that the use of a total summed score provides a higher correlation with the BDI-II and PANSI-NSI. Further, corollary evidence suggests that summed scores of the MHSS suicide risk questions (items 6 to 10) yield even stronger correlations with the BDI-II and PANSI-NSI. Using summed scores would make the

MHSS more like a measure such as the PANSI, which was designed to screen for acute suicidal ideation.

The use of summed scores based on all ten MHSS suicide questions might provide a more global screening of suicide risk as well as the presence of factors considered correlates or associates of suicidal behavior. The overall findings of this study did not establish evidence for concurrent validity of the MHSS. However, the fact that stronger correlations were obtained when the MHSS items were summed may be of some use to those who wish to redevelop the MHSS using contemporary psychometric development approaches. The most prudent course would be to replace the MHSS with a measure such as the PANSI (see Summary and Recommendations section); however if a redesign of the MHSS were desired, the use of summed scores are suggested.

This study examined the internal consistency of the BDI-II, PANSI, and MHSS. The BDI-II Cronbach's alpha level for this study was high (.90), consistent with previous studies (Cronbach's alpha = .87 to .94; Beck, 1996; Coelho et al., 2002; Dozois et al., 1998; Groth-Marnat, 2003; Osman et al., 2008; Osman et al., 2003; Subramaniam et al., 2009; VanVoorhis & Blumentrit, 2007). The Cronbach's alpha levels for each PANSI subscale were slightly lower for this study (PANSI-NSI = .67, PANSI-PI = .73) than the levels obtained in previous studies (Cronbach's alpha = .91 to .96 for the PANSI-NSI and Cronbach's alpha = .80 to .89 for the PANSI- PI; Muehlenkamp et al., 2005; Osman et al., 2002; Osman et al., 2003; Osman et al., 1998b). This is the first study to examine the psychometric properties of the PANSI with a sample of multiculturally diverse adjudicated youth. The nature of this sample may explain the lower internal consistency

results that have been previously found with other samples of non-adjudicated youth. Previous research samples have not included adjudicated youth or the extent of cultural diversity that was inherent in this study's sample; the PANSI appears less internally consistent with a sample of multiculturally diverse adjudicated adolescents. Helms, Henze, Sass, and Mifsud (2006) noted that fluctuations in specific sample composition can impact internal consistency, citing that researchers and clinicians should not abandon measures grounded in theoretical frameworks (as is the PANSI) in favor of measures that attempt to function specifically for a given sample.

In addition to adjudication status and a more diverse range of cultural identities among youth in this sample, reading difficulties may be another possible explanation for the lower obtained PANSI Cronbach's alpha levels in this study. Reading disabilities are more prevalent among adjudicated youth than among youth in the general population (Shelley-Tremblay, O'Brien, & Langhinrichsen-Rohling, 2007). The obtained Cronbach's alpha level in this study for the BDI-II, which has a 5th-grade reading level, was similar to levels found in previous research. The PANSI, with its higher reading level of grade 7.8, had lower Cronbach's alpha levels in this study than previous research. The data for this study did not include reading levels; therefore, this possible explanation for lower achieved PANSI Cronbach's alpha levels is speculative.

The lower obtained Cronbach's alpha levels for the PANSI in this study's sample are worth further exploration if the PANSI is to be used as a clinical tool within AKDJJ facilities (see recommendations in the following subsection). Presently, there is no universally accepted standard for what is considered an appropriate Cronbach's alpha

level. Some researchers suggest using benchmarks that range from .50 to .90 (e.g., Bland & Altman, 1997; DeVellis, 1991; Streiner, 2003). Other experts (e.g., Helms et al., 2006; Pedhazur & Schmelkin, 1991) state that researcher judgment should guide what is considered adequate. Ideally, the PANSI would achieve internal consistency levels with a sample of Alaska's adjudicated youth on par with those found in previous PANSI research. Should the PANSI be adopted in place of the MHSS, a thorough validation study should be undertaken with a large sample of adjudicated Alaskan youth (see recommendations in the following subsection). In light of the variety and range of expert recommendations noted above, it could be argued that the Cronbach's alpha levels obtained in this study suggest that the PANSI is acceptable for clinical use with Alaska's adjudicated youth. However, the most appropriate suggestion regarding the use of the PANSI is to do so only if the results of a thorough validation study provide compelling evidence for its use with this unique population.

For the MHSS, the obtained Cronbach's alpha levels are low, and not acceptable for clinical use, likely due to the fact that the MHSS was not created using contemporary psychological test development procedures. The lack of clear unidimensional constructs within the MHSS and the limited item response range ("yes" or "no") also likely contributed to the low obtained Cronbach's alpha levels. The MHSS was designed as a brief screening tool for mental health and suicide risk factors and therefore includes a broad range of questions.

As a final discussion point, a noteworthy and unanticipated outcome of this study was the substantial difference between suicide watch levels derived via actuarial guidelines for the MHSS versus final watch level assigned by the admitting staff member. A notable number of youth were assigned by admitting staff to a suicide watch level that was much lower (i.e., less conservative) than the watch level indicated by the MHSS scoring guidelines. The MHSS includes decision-rule guidelines that are worded in a manner that permit a great deal of flexibility on the part of the admission staff and allows for the consideration of additional data available to admission staff beyond the MHSS items. Likewise, MYC policy states that admission staff should use other information from the admission in addition to MHSS results, to determine suicide watch level placement. Indeed the low-base rate of suicide attempts and death by suicide (as previously noted, the last suicide in MYC occurred in the 1980s) indicate that these clinical decisions have not resulted in a completed suicide. However, it is clear that when the suicide watch level guidelines on the MHSS were converted into stricter rules for this research, the outcome was the assignment of more conservative suicide watch levels than what clinicians assigned youth to. Thus, should the MHSS remain in use (which at this point is not recommended; see recommendations in the following section), the suicide watch level guidelines should be strictly followed as a primary means of assigning a suicide watch level.

Not surprisingly, the results of this research highlight a disparity between actuarial judgment, such as when using the strict MHSS scoring guidelines, and decisions informed by clinical judgment. The field of psychology has been engaged in an ongoing,

decades-long debate regarding the use of actuarial and statistically derived outcomes versus clinical judgment and intuition. Grove, Zald, Lebow, Snitz, and Nelson (2000) conducted a meta-analysis on studies of human health and behavior, reporting that actuarial or mechanical-prediction techniques outperformed clinical prediction in roughly half of the included studies, just under half showed no significant difference, and only 6 to 16% demonstrated more accuracy in clinical judgment. Gottfredson and Moriarty (2006) argue that both actuarial information and clinical judgment should be considered in decision making.

Summary and Recommendations

In summary, the results of this study do not provide evidence for the concurrent validity of the MHSS. Although statistically significant correlations with the BDI-II and the PANSI were obtained, they were not at an acceptable level to suggest concurrent validity. Regarding the chi-square analyses, a significant relationship was found only for the MHSS and BDI-II (supplemental Cohen's kappa results indicate that this is a poor relationship). The hierarchical moderated multiple regression results suggest that gender and ethnicity do not moderate the relations of the MHSS with the BDI-II and PANSI.

Based on the results of this study, the AKDJJ may wish to consider replacing the suicide risk behavior items of the MHSS with the PANSI. This exchange would provide notable empirical backing to their suicide risk screening process, as the PANSI was developed using psychometric principles and has been shown to have strong evidence for validity (e.g., Meehan et al., 2007; Muehlenkamp et al., 2005; Osman et al., 1998b; Osman et al., 2003). In addition, the PANSI is widely available, free of charge, and has a

brief administration time. Finally, as previously noted, research suggests that youth may be more likely to disclose suicidal ideation via self-report measures versus disclosure in face-to-face interviews. Therefore, it is recommended that the AKDJJ retain a self-report measure of suicide ideation, such as the PANSI, within their overall initial assessment.

If the AKDJJ does choose to use the PANSI, it would be advised to conduct a thorough validation study of this instrument with its population of adjudicated youth. Because the PANSI was developed using psychometric tenets, it is possible to conduct a validation study that would be more rigorous and comprehensive in nature than was possible with the MHSS. For example, confirmatory factor analysis could be conducted to determine if the factor structure for the local sample is similar to that of previous research. Internal consistency should be examined and compared to previous research findings, including the lower Cronbach's alpha levels found in this study. Reliability assessments could include internal reliability of factors as well as test-retest reliability. Item response theory analyses (Streiner, 2010) could be used to determine if particular items in factors have better discriminant validity in relation to clinical categories provided by other validated measures. In addition, in order to assess the PANSI's performance with different genders or ethnic groups, a measurement invariance analysis (Dimitrov, 2010) could be conducted to establish that the measurement models (e.g., factor structure and reliability coefficients) are equivalent. A robust validation study would include a large statewide sample of adjudicated youth, and possibly a multi-year sample, to ensure that a full range of scores on the PANSI is obtained. Receiver Operator

Characteristics analyses could then be conducted to determine the optimum cut-off scores for each PANSI scale to balance sensitivity and specificity (e.g., Perry & Gilbody, 2009).

In addition to replacing the MHSS with the PANSI, the AKDJJ may consider increasing the frequency in which suicide assessment occurs. Heightened suicide risk is not limited to the period surrounding admission. Hayes (2004) found that suicidal behavior among adjudicated youth was likely to occur at any point during custody and not solely within the time during or just after admission. Witte, Fitzpatrick, Warren, Schatschneider, and Schmidt (2006) found that among older teenagers and adults, day-to-day variability in severity of suicidal ideation levels was an expected norm, rather than an exception, with greater fluctuations suggesting increased suicidal pathology. Given these findings, some form of ongoing suicidal ideation and risk screening, such as using the PANSI, would assist MYC in assessing risk for the adjudicated youth within the facility over the course of their stay.

From the outset, MYC management staff were interested in engaging in a collaborative research approach, with the goal of evaluating and improving their suicide risk screening process. This study found that the MHSS measure may yield information that assists clinical staff in determining suicide watch placement; however, the MHSS has serious psychometric limitations, and no evidence for concurrent validity was established. If the AKDJJ wishes to continue to use the MHSS (which again, is not recommended), the suicide watch level guidelines should be strictly followed; following the MHSS guidelines in an actuarial manner would provide more conservative suicide watch levels. It is ultimately recommended that the AKDJJ consider replacing the MHSS with a

suicidal risk measure that has established and acceptable psychometric properties, such as the PANSI (noting the need for a validation study with adjudicated Alaskan youth cited above).

Contributions to Current Literature

In addition to contributing to the applied needs of the AKDJJ, this research contributes to the larger literature base on adjudicated youth, suicide risk screening, the BDI-II, and the PANSI in two ways. Although the MHSS did not show evidence of concurrent validity with this sample, it does contain questions about current suicide risk that MYC admission staff use in conjunction with other admission information to make clinical judgments regarding risk levels. Hayes (2004) suggests that suicide risk assessment is not done with enough frequency in other juvenile detention facilities nationwide. Given the elevated risk for suicide in adjudicated youth populations, ongoing suicide risk screening is an important aspect of MYC's admission procedures, and some form of suicide risk assessment should be retained. The importance of continued suicide risk screening for all MYC youth is evidenced by research findings that screening all youth for suicide risk upon admission to a youth facility is associated with significantly lower odds of serious suicide attempts within the facility (Gallagher & Dorbin, 2005).

Second, the BDI-II and PANSI have been used with participants from clinical, general population, and diverse multicultural samples. This research provided data from a multicultural, adjudicated sample of youth, a new population sample for both the BDI-II and PANSI. Internal consistency for the BDI-II was similar to that of prior research. The

PANSI had adequate internal consistency, albeit lower for this sample than that of previous research findings.

Limitations

This current study was focused on examining relations between measures of suicide risk, which the MHSS is purported to assess. The PANSI and BDI-II, measures of suicide risk factors and protective factors against suicide risk, were therefore used. The MHSS includes two questions that refer directly to suicidal behaviors (such behaviors are themselves considered suicide risk factors). This study did not utilize a direct measure of suicidal behavior and thus there was no means of examining the relation between the two suicidal behavior questions on the MHSS and a validated measure of suicidal behavior.

The fact that very few youth were placed on the highest suicide watch level (both by admission staff and by MHSS guidelines) is a notable limitation of this study. In order to overcome this issue of reduced range in future studies, a larger sample collected over a longer time period is recommended.

The unequal size of the gender subgroups (154 male, 46 female) may have reduced the power to determine whether gender had a moderating effect on MHSS, BDI-II, and PANSI scores. Aguinis (2004) indicated that power is optimized when subgroups are equal and suggested a minimum subgroup proportion of .30. The proportion of the gender subgroups in this study (.30) falls directly at Aguinis' minimum recommendation. Nonetheless, failure to find an interaction effect of gender on MHSS, BDI-II, and PANIS scores may have been influenced by the unequal size of the gender subgroups.

Due to the small, unique population of adjudicated youth in Alaska, the findings may have limited external validity. As such, several implications are noteworthy. First, conclusions about the relationships between the three suicide measures must be looked at with caution when applied to samples that differ from that of this study. Second, the demographics of Alaska's youth may be different from those in other areas of the country, and thus the concurrent validity findings may not be applicable in other locations.

Because of the self-report nature of the MHSS, BDI-II, and PANSI, youth could have provided false answers (e.g., denying depression or suicidality). Factors related to the admission procedure, such as the one-on-one structure of the admission, a possible lack of familiarity and trust of the admitting staff member by youth, and the stressful nature of being brought to a youth detention facility, may have contributed to participant's minimizing or giving false answers. Future studies should examine the general validity of participants' self-report under these assessment conditions through the use of measures to assess for reporting bias or collateral information (e.g., parents or peers). Prinstein et al. (2001) recommend the use of self-report measures for youth, citing that youth are more likely to disclose suicidal ideation via a self-report measure than an in-person interview.

Future Research

The AKDJJ, as a collaborative research partner, prioritized examining only the suicide aspects of the MHSS; the mental health screening aspects of the MHSS were not studied. If the state of Alaska continues using the MHSS, additional research should

focus on whether the mental health portion of the MHSS is actually providing useful mental health information. In its current form, there are only four questions in the mental health section. Expanding this section to include more aspects of mental health, such as previous and current diagnoses, stressors, family dynamics, and community and cultural connections, to name a few, may provide a more comprehensive screening. Myers and Ferrall (2008) noted that adjudicated youth have higher rates of community and familial stressors than their non-adjudicated peers. The current mental health questions on the MHSS do not tap these dimensions.

The AKDJJ serves rural and urban youth within youth facilities across the state. Future research should draw from a larger number of ethnically diverse populations and from locations throughout the state of Alaska, emphasizing the inclusion of rural sites in subsequent analyses. Targeted oversampling of rural participants would be an effective means of increasing rural inclusion and adequate sample sizes for comparative analyses. Relatedly, a larger sample of adjudicated youth within the AKDJJ system may have provided a less skewed distribution of MHSS responses. Future research should aim to enlist a larger sample of adjudicated youth.

It is unclear what specifically contributes to the low suicide rate within MYC. Factors such as availability of mental health staff, the mentorship role of staff for youth, or MYC's use of the restorative justice model, may serve to reduce suicidal ideation or suicidal behaviors. It is worth the attention of future research to examine and highlight what, if any, additional protective factors against suicide are present within the facility.

Future research should remain committed to improving the experiences of adjudicated youth.

References

Abram, K. M., Choe, J. Y., Washburn, J. J., Teplin, L. A., King, D. C., & Dulcan, M. K. (2008). Suicidal ideation and behaviors among youth in juvenile detention. *Journal of the American Academy of Child and Adolescent Psychiatry, 47*(3), 291-300. doi: 10.1097/chi.0b013e318160bce

Aguinis, H. (2004). *Regression analysis for categorical moderators.* New York: The Guilford Press.

Aiken, L. R. & Groth-Marnat, G. (2006). *Psychological testing and assessment* (12th ed.). Boston, MA: Pearson.

Alaska Health and Social Services, Division of Juvenile Justice. (2008). *Youth facilities.* Retrieved March 19, 2008 from: http://www.hss.state.ak.us/djj/facilities/default.htm

Alaska Health and Social Services, Division of Juvenile Justice. (2010a). *Fiscal year 2010 DJJ data.* Retrieved May 26, 2011 from: http://www.hss.state.ak.us/djj/information/stats_fy2010/default.htm

Alaska Health and Social Services, Division of Juvenile Justice. (2010b). *Fiscal year 2010 DSM-IV-TR Summary.* Retrieved May 26, 2011 from: http://www.hss.state.ak.us/djj/information/stats_fy2010/FY10_DSM-IV.pdf

Alaska Health and Social Services, Statewide Suicide Prevention Council. (2005). *Alaska suicide prevention plan.* State of Alaska Department of Health and Social Services. Retrieved November 19, 2009 from: http://www.hss.state.ak.us/suicideprevention/pdfs_sspc/SuicidePrevPlan050505.pdf

Alaska Health and Social Services. Statewide Suicide Prevention Council. (2010). *Suicide Epidemiology Update-Alaska, 2004 to 2008.* State of Alaska Department of Health and Social Services. Retrieved March 30, 2011 from: http://www.epi.alaska.gov/bulletins/docs/b2010_28.pdf

Allberg, W. R. & Chu, L. (1990). Understanding adolescent suicide: Correlates in a developmental perspective. *School Counselor, 37*(5), 343-350.

American Academy of Child and Adolescent Psychiatry. (2000). *Practice parameter for the assessment and treatment of children and adolescents with suicidal behavior.* Retrieved March 12, 2008 from: http://www.aacap.org/galleries/PracticeParameters/suicide.pdf

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders*, (4th ed.). doi:10.1176/appi.books.9780890423349

Applied Survey Research. (2008). *Envision Anchorage: Anchorage community assessment project 2008 report.* Retrieved November 19, 2009 from: http://liveunitedanchorage.org/ViewPage.aspx?Id=db57e6b9-69d1-4d26-b511 f86ba16ba784

Beck, J. S., Beck, A. T., & Jolly, J. B. (2001). *Beck Youth Inventories of emotional & social impairment manual.* San Antonio, TX: Psychological Corporation.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck-II, Beck Depression Inventory.* San Antonio, TX: Psychological Corporation.

Beck, A. T., Steer, R. A., Kovacs, M., & Garrison, B. (1985). Hopelessness and eventual suicide: A 10-year prospective study of patients hospitalized with suicidal ideation. *American Journal of Psychiatry, 142*, 559-563. doi: 10.1111/j.1749-6632.1986.tb27888.x

Beck, A.T., Steer, R.A., & Ranieri, W.F. (1988). Scale for suicide ideation: Psychometric properties of a self-report version. *Journal of Clinical Psychology, 44*(4), 499-505.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J. E., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.

Beck, A. T., Weissman, A., Lester, D., & Trexler, M. (1974). The measurement of pessimism: The Hopelessness Scale. *Journal of Consulting and Clinical Psychology, 42*, 861-865.

Berman, A. L., Jobes, D. A., & Silverman, M. M. (2006). *Adolescent suicide: Assessment and intervention.* Washington, D.C.: American Psychological Association.

Bland, J. M. & Altman, D. G. (1997). Statistics notes: Cronbach's alpha. *British Medical Journal, 314*, 572.

Bose-Deakins, J. E. & Floyd, R. G. (2004). A review of the Beck Youth Inventories of emotional and social impairment. *Journal of School Psychology, 42*, 333-340.

Bridge, J. A., Goldstein, T. R., & Brent, D. A. (2006). Adolescent suicide and suicidal behavior. *Journal of Child Psychology and Psychiatry, 47*(3/4), 372-394. doi:10.1111.j.1469-7610.2006.01615.x

Brown, J., Cohen, P., Johnson, J. G., & Smailes, E. M. (1999). Childhood abuse and neglect: Specificity of effects of adolescent and young adult depression and suicidality. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*(12), 1490-1496.

Bryson, S.E. & Pilon, D.J. (1984). Sex differences in depression and the method of administering the Beck Depression Inventory. *Journal of Clinical Psychology, 40*(2), 529-534. doi:10.1002/1097-4679(198403)40:2<529::AID-JCLP2270400224>3.0.CO;2-F

Byrne, B. M, Baron, P., & Campbell, T. L. (1993). Measuring adolescent depression: Factorial validity and invariance of the Beck Depression Inventory across gender. *Journal of Research on Adolescents, 3*(2), 127-143. doi:10.1207/s15327795jra0302_2

Byrne, B. M., Shavelson, R. J., & Muthén, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin, 105,* 456-466.

Canino, G. & Roberts, R. E. (2001). Suicidal behavior among Latino youth. *Suicide and Life-Threatening Behavior, 31*, 122-131.

Centers for Disease Control and Prevention. (2007). Suicide trends among youth and young adults aged 10-24 years-United States, 1990-2004. *Morbidity and Mortality Weekly Report, 56*(35), 905-908.

Centers for Disease Control and Prevention. (2009). *Suicide Prevention: Youth Suicide.* Retrieved 8/18/11 from: http://cdc.gov/violenceprevention/pub/youth_suicide.html

Centers for Disease Control and Prevention. (2010). Youth Risk Behavior Surveillance-United States, 2009. *Morbidity and Mortality Weekly Report, 59*(SS-5), 1-142.

Chagnon, F. (2007). Coping mechanisms, stressful events, and suicidal behavior among youth admitted to juvenile justice and child welfare services. *Suicide and Life-Threatening Behavior, 37*(4), 439-452. doi:10.1521/suli.2007.37.4.439

Chang, H., Lin, C., Chou, K., Ma, W., & Yang, C. (2009). Chinese version of the Positive and Negative Suicide Ideation Instrument development. *Journal of Advanced Nursing, 65*(7), 1485-1496. doi: 10.1111/j.1365-2648.2009.05005.x

Chavira, D. A., Accurso, E. C., Garland, A. F., & Hough, R. (2010). Suicidal behaviour among youth in five public sectors of care. *Child and Adolescent Mental Health, 15*(1), 44-51. doi: 10.1111/j.1475-3588.2009.00532.x

Chew, W., Osseck, J., Raygor, D., Eldridge-Houser, J., & Cox, C. (2010). Developmental assets: Profile of youth in a juvenile justice facility. *Journal of School Health, 80* (2), 66-72. doi:10.1111/j.1746-1561.2009.00467.x

Cho, H., Hallfors, D. D., & Iritani, B. J. (2007). Early initiation of substance use and subsequent risk factors related to suicide among urban high school students. *Addictive behaviors, 32*, 1628-1639. doi:10.1016/j.addbeh.2006.11.017

Clark-Carter, D. (2004). *Quantitative psychological research: A student's handbook.* New York: Taylor & Francis Routledge.

Coelho, R., Martins, A., & Barros, H. (2002). Clinical profiles relating gender and depressive symptoms among adolescents ascertained by the Beck Depression Inventory II. *European Psychiatry, 17*, 222-226. doi:10.1016/S0924-9338(02)00663-6

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-159. doi:10.1037/0033-2909.112.1.155

Cohen, J., Cohen, P., West, S. G., & Aiken, L.S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences (3rd ed.).* Mahwah, New Jersey: Lawrence Erlbaum Associates.

Cole, D. A. (1989). Psychopathology of adolescent suicide: Hopelessness, coping beliefs, and depression. *Journal of Abnormal Psychology, 98*, 248-255. doi:10.1037/0021-843X.98.3.248

Corcoran, K. & Graham, T. C. (2002). In thought, word, and deed: Suicidal behaviors of adjudicated youth. *Brief Treatment and Crisis Intervention, 2*(3), 233-239.

Corneau, M. & Lanctot, N. (2004). Mental health outcomes of adjudicated males and females: The aftermath of juvenile delinquency and problem behaviour. *Criminal Behaviour and Mental Health, 14*, 251-262.

Cronbach, L. J. & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52*, 281-302. doi:10.1037/h0040957

Cull, J. G. & Gill, W. S. (1982). *Suicide Probability Scale.* Los Angeles, CA: Western Psychological Services.

Davey, G. (Ed.). (2006). *Encyclopaedic Dictionary of Psychology.* London: Hodder Arnold Publishers.

DeVellis, R. F. (1991). *Scale development: Theory and applications.* Newbury Park, CA: Sage.

Dimitrov, D. M. (2010). Testing for factorial invariance in the context of construct validation. *Measurement and Evaluation in Counseling and Development, 43* (2), 121-149. doi: 10.1177/0748175610373459

Domalanta, D. D., Risser, W. L., Roberts, R. E., & Risser, J. M. (2003). Prevalence of depression and other psychiatric disorders among incarcerated youth. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(4), 477-484. doi: 10.1097/01.CHI.0000046819.95464.0B

Dozois, J. A., Dobson, K. S., & Ahnberg, J. L. (1998). A psychometric evaluation of the Beck Depression Inventory-II. *Psychological Assessment, 10,* 83-89. doi:10.1037/ 1040-3590.10.2.83

Farand, L., Chagnon, F., Renaud, J., & Rivard, M. (2004). Completed suicides among Quebec adolescents involved with juvenile justice and child welfare services. *Suicide and Life-Threatening Behavior, 34*(1), 24-35. doi:10.1521/suli.34.1. 24.27774

Fennig, S. & Hadas, A. (2010). Suicidal behavior and depression in adolescents with eating disorders. *Nordic Journal of Psychiatry, 64*(1), 32-39. doi:10.3109/08039480903265751

Fergusson, D. M., Beautrais, A. L., & Horwood, L. J. (2003). Vulnerability and resiliency to suicidal behaviours in young people. *Psychological Medicine, 33*, 61-73. doi:10.1 017/S0033291702006748

Fergusson, D. M., Woodward, L. J., & Horwood, L. J. (2000). Risk factors and life processes associated with the onset of suicidal behaviour during adolescence and early adulthood. *Psychological Medicine, 30,* 23-39.

Gallagher, C. A. & Dorbin, A. (2005). The association between suicide screening practices and attempts requiring emergency care in juvenile justice facilities. *Journal of the American Academy of Adolescent Psychiatry, 44*(5), 485-493. doi:10.1097/01. chi.0000156281.07858.52

Gallagher, C. A. & Dorbin, A. (2006a). Deaths in juvenile residential facilities. *Journal of Adolescent Health, 38*, 662-668. doi:10.1016/j.jadohealth.2005.01.002

Gallagher, C. A. & Dorbin, A. (2006b). Facility-level characteristics associated with serious suicide attempts and deaths from suicide in juvenile justice residential facilities. *Suicide and Life-Threatening Behavior, 36*(3), 363-375. doi:10.1521/ suli.2006.36.3.363

Gavin, H. (2008). *Understanding research methods and statistics in psychology.* Los Angeles: Sage.

Goldston, D. B. (2000). *Assessment of suicidal behaviors and risk among children and adolescents*. Bethesda, MD: National Institute of Mental Health, Developmental Psychopathology and Prevention Research Branch.

Goldston, D. B., Molock, S. D., Whitbeck, L. B., Murakami, J. L., Zayas, L. H., & Hall, G. C. (2008). Cultural considerations in adolescent suicide prevention and psychosocial treatment. *American Psychologist, 63*(1), 14-31. doi:10.1037./0003-066x.63.1.14

Gottfredson, S. D. & Moriarty, L. J. (2006). Clinical versus actuarial judgments in criminal justice decisions: Should one replace the other? *Federal Probation, 70*(2), 15-18.

Gould, M. S., Greenberg, T., Velting, D. M. & Shaffer, D. (2003). Youth suicide risk and preventative interventions: A review of the past ten years. *Journal of the Academy of Child and Adolescent Psychiatry, 42*(4), 386-405. doi: 10.1097/01.CHI.0000046821.95464.CF

Gravetter, F. J. & Forzano, L. B. (2003). *Research methods for the behavioral sciences.* Belmont, California: Wadsworth.

Gretton, H. M. & Clift, R. (2011). The mental health needs of incarcerated youth in British Columbia, Canada. *International Journal of Law and Psychiatry, 34*, 109-115. doi: 10.1016/j.ijlp.2011.02.004

Groth-Marnat, G. (2003). *Handbook of psychological assessment* (4th ed.). Hoboken, New Jersey: John Wiley & Sons, Inc.

Grothe, K. B, Dutton, G. R., Jones, G. N., Bodenlos, J., Ancona, M., Brantley, P. J. (2005). Validation of the Beck Depression Inventory-II in a low income African American sample of medical outpatients. *Psychological Assessment, 17*(1), 110-114. doi:10. 1037/1040-3590.17.1.110

Grove, W. M., Zald, D. H., Lebow, B. S., Snitz, B. E., & Nelson, C. (2000). Clinical versus mechanical prediction: A meta-analysis. *Psychological Assessment, 12*, 19-30. doi:1 0.1037/1040-3590.12.1.19

Gutierrez, P. M. & Osman, A. (2008). *Adolescent suicide.* DeKalb, Illinois: Northern Illinois University Press.

Gutierrez, P. M., Osman, A., Barrios, F. X., Kopper, B. A., Baker, M. T., & Haraburda, C. M. (2002). Development of the Reasons for Living Inventory for Young Adults (RFL-YA). *Journal of Clinical Psychology, 58*, 339–357. doi:10.1002/jclp.1147

Hankin, B. L., Abamson, L. Y., & Siler, M. (2001). A prospective test of the Hopelessness Theory of Depression in adolescence. *Cognitive Therapy and Research, 5*, 607-632.

Harris, T. E. & Lennings, C. J. (1993). Suicide and adolescence. *International Journal of Offender Therapy and Comparative Criminology, 37*, 263-270. doi:10.1177/0306624X9303700307

Hayes, L. M. (2004). *Juvenile suicide in confinement: A national survey.* Mansfield, MA: National Center of Institutions and Alternatives.

Helms, J. E., Henze, K. T., Sass, T. L., & Mifsud, V. A. (2006). Treating Cronbach's alpha reliability coefficients as data in counseling research. *The Counseling Psychologist, 34*(5), 630-660. doi:10.1177/0011000006288308

Javdani, S., Sadeh, N., & Verona, E. (2011). Suicidality as a function of impulsivity, callous-unemotional traits, and depressive symptoms in youth. *Journal of Abnormal Psychology, 120*(2), 400-413. doi:10.1037/a0021805

Kazdin, A. E. (2003). *Research design in Clinical Psychology*. Boston: Allyn & Bacon.

Kelly, T. M., Lynch, K. G., Donovan, J. E., & Clark, D. B. (2001). Alcohol use disorders and risk factor interactions for adolescent suicidal ideation and attempts. *Suicide and Life-Threatening Behavior, 3*(12), 181-193. doi:10.1521/suli.31.2.181.21512

Kempton, T. & Forehand, R. I. (1992). Suicide attempts among juvenile delinquents: The contribution of mental health factors. *Behaviour Research and Therapy, 30*, 537-541. doi:10.1016/0005-7967(92)90038-I

Kirkcaldy, B. D., Eysenck, M. W., & Siefen, G. R. (2004). Psychological and social predictors of suicidal ideation among young adolescents. *School Psychology International, 25*(3), 301-316. doi:10.1177/0143034304046903

Kline, T. (2005). *Psychological testing: A practical approach to design and evaluation.* Thousand Oaks, California: Sage Publications.

Ko, S. J., Wasserman, G. A., McReynolds, L. S., & Katz, L. M. (2004). Contribution of parent report to Voice DISC-IV diagnosis among incarcerated youth. *Journal of the American Academy of Child and Adolescent Psychiatry, 43*(7), 868-877. doi:10.1097/01.chi.0000128788.03192.fa

Krefetz, D. G., Steer, R. A., Gulab, N. A., & Beck, A. T. (2002). Convergent validity of the Beck Depression Inventory-II with the Reynolds Adolescent Depression Scale in psychiatric inpatients. *Journal of Personality Assessment, 78*(3), 451-460. doi:10.1207/S15327752JPA7803_05

Landy, F. J. (1986). Stamp collecting versus science: Validation as hypothesis testing. *American Psychologist, 41*(11), 1183-1192. doi:10.1037/0003-066X.41.11.1183

Langhinrichsen-Rohling, J. & Lamis, D. A. (2008). Current suicide proneness and past suicidal behavior in adjudicated adolescents. *Suicide and Life Threatening Behavior, 38*(4), 415-426. doi:10.1521/suli.2008.38.4.415

Lewshe, C. L. (1985). Inferences from personnel tests and their validities. *Journal of Applied Psychology, 70*, 237-238. doi:10.1037/0021-9010.70.1.237

Liu, R. X. (2006). Vulnerability to friends' suicide influence: The moderating effects of gender and adolescent depression. *Journal of Youth and Adolescence, 35*(3), 454-464. doi:10.1007/s10964-006-9028-7

Malterer, M. B., Lilienfeld, S. O., Neumann, C. S., & Newman, J. P. (2010). Concurrent validity of the psychopathic personality inventory with offender and community samples. *Assessment, 17*(1), 3-15. doi:10.1177/1073191109349743

Meehan, S., Peirson, A., & Fridjhon, P. (2007). Suicide ideation in adolescent South Africans: The role of gender and coping strategies. *South African Journal of Psychology, 37* (3), 552-575.

Muehlenkamp, J. J., Gutierrez, P. M., Osman, A., & Barrios, F. X. (2005). Validation of the positive and negative suicide ideation (PANSI) inventory in a diverse sample of young adults. *Journal of Clinical Psychology, 61*(4), 431-445. doi:10.1002/jclp.20051

Myers, D. M. & Farrell, A. F. (2008). Reclaiming lost opportunities: Applying public health models in juvenile justice. *Children and Youth Services Review, 30*, 1159-1177. doi:10.1016/j.childyouth.2008.03.002

Nock, M. K., Borges, G., Bromet, E. J., Alonso, J., Angermeyer, M., Beautrais, A.,...Williams, D. (2008). Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *The British Journal of Psychiatry, 192,* 98-105: doi:10.1192/bjp.bp.107.040113

Nock, M. K., Hwang, I., Sampson, N., Kessler, R. C., Angermeyer, M., Beautrais, A.,...Williams. (2009). Cross-national analysis of the associations among mental disorders and suicidal behavior: Findings from the WHO World Mental Health surveys. *PLoS Medicine, 6*(8), 1-17. doi:10.1371/journal.pmed.1000123

Nock, M. K. & Kessler, R. C. (2006). Prevalence of and risk factors for suicide attempts versus suicide gestures: Analysis of the National Comorbidity Survey. *Journal of Abnormal Psychology,115*, 3, 616-623. doi:10.1037/0021-843X.115.3.616

Nrugham, L., Larson, B., & Sund, A. M. (2008). Specific depressive symptoms and disorders as associates and predictors of suicidal acts across adolescence. *Journal of Affective Disorders, 11*, 83-93. doi:10.1016/j.jad.2008.02.010

Osman, A., Bagge, C. L., Gutierrez, P. M., Konick, L. C., Kopper, B. A., & Barrios, F. X. (2001). The Suicidal Behaviors Questionnaire-Revised (SBQ-R): Validation with clinical and nonclinical samples. *Assessment*, 8, 445– 455. Doi:10.1177/1073191101 00800409

Osman, A., Barrios, F. X., Gutierrez, P. M., Williams, J. E., & Bailey, J. (2008). Psychometric properties of the beck depression inventory-II in nonclinical adolescent samples. *Journal of Clinical Psychology, 64*(1), 83-102. doi:10.1002/jclp. 20433

Osman, A., Barrios, F. X., Gutierrez, P. M., Wrangham, J. J., Kopper, B. A., Truelove, R. S., & Linden, S.C. (2002). The positive and negative suicide ideation (PANSI) inventory: Psychometric evaluation with adolescent psychiatric inpatient samples. *Journal of Personality Assessment, 79*(3), 512-530. doi:10.1207/S15327752JPA7903 _07

Osman, A., Downs, W. R., Kopper, B. A., Barrios, F. X., Baker, M. T., Osman, J. R.,... Linehan, M. M. (1998a). The Reasons for Living Inventory for Adolescents (RFL-A): Development and psychometric properties. *Journal of Clinical Psychology, 54*, 1063-1078.

Osman, A., Gutierrez, P. M., Jiandani, J., Kopper, B. A., Barrios, F. X., Linden, S. C., & Truelove, R. S. (2003). A preliminary validation of the positive and negative suicide ideation (PANSI) inventory with normal adolescent samples. *Journal of Clinical Psychology, 59*(4), 493-512. doi:10.1002/jclp.10154

Osman, A., Guitierrez, P. M., Kopper, B. A., Barrios, F. X., & Chiros, C. E. (1998b) The Positive and Negative Suicide Ideation Inventory: Development and validation. *Psychological Reports, 82*, 783-793. doi:10.2466/PR0.82.3.783-793

Osman, A., Kopper, B. A., Barrios, F., Gutierrez, P. M., & Bagge, C. L. (2004). Reliability and validity of the Beck Depression Inventory-II with adolescent psychiatric inpatients. *Psychological Assessment, 16* (2), 120-132. doi:10.1037/1040-3590.16.2.120

Palmer, E. J. & Binks, C. (2008). Psychometric properties of the Beck Depression Inventory-II with incarcerated male offenders aged 18-21. *Criminal Behaviour and Mental Health, 18*, 232-242. doi:10.1002/cbm.701

Pardini, D., Obradovic, J., & Loeber, R. (2006). Interpersonal callousness, hyperactivity/impulsivity, inattention, and conduct problems as precursors to delinquency persistence in boys: A comparison of three grade-based cohorts. *Journal of Clinical Child and Adolescent Psychology, 35*(1), 46-59. doi:10.1207/s15374424jccp3501_5

Pedhazur, E. J. & Schmelkin, L.(1991). *Measurement, design, and analysis: An integrated approach.* Hillsdale, NJ: Lawrence Erlbaum.

Penn, J. V., Esposito, C. L., Schaeffer, L. E., Fritz, G. K., & Spirito, A. (2003). Suicide attempts and self-mutilative behavior in a juvenile correctional facility. *Journal of the American Academy of Child and Adolescent Psychiatry,42*(7), 762-769. doi:10.1097/01.CHI.0000046869.56865.46

Perry, A. E. & Gilbody, S. (2009). Detecting and predicting self-harm behaviour in prisoners: A prospective psychometric analysis of three instruments. *Social Psychiatry and Epidemiology, 44* (10), 853-861. doi: 10.1007/s00127-009-0007-7

Pinhey, T. K. & Millman, S. R. (2004). Asian/Pacific Islander adolescent sexual orientation and suicide risk in Guam. *American Journal of Public Health, 94*(7), 1204-1206. doi:10.2105/AJPH.94.7.1204

Piquet, M. L. & Wagner, B. M. (2003). Coping responses of adolescent suicide attempters and their relation to suicidal ideation across a 2-year follow-up: A preliminary study. *Suicide & Life-Threatening Behavior, 33*(3), 288-301. doi:10.152 1/suli.33.3.288.23212

Portzky, G., Audenaert, K., & van Heeringen, K. (2009). Psychosocial and psychiatric factors associated with adolescent suicide: A case-control psychological autopsy study. *Journal of Adolescence, 32*, 849-862. doi:10.1016/j.adolescence.2008.10.007

Prinstein, M. J., Nock, M. K., Simon, V., Aikins, J. W., Cheah, C. S. L., Spirito, A. (2008). Longitudinal trajectories and predictors of adolescent suicidal ideation and attempts following inpatient hospitalization. *Journal of Consulting and Clinical Psychology, 76* (1), 92-103. doi:10.1037/0022-006X.76.1.92

Prinstein, M. J., Nock, M. K., Spirito, A., & Grapentine, W. L. (2001). Multi-method assessment of adolescent suicidality in adolescent psychiatric inpatients: Preliminary results. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 1053-1061.

Putininš, A. L. (2005). Correlates and Predictors of self-reported suicide attempts among incarcerated youth. *International Journal of Offender Therapy and Comparative Criminology, 49* (2), 143-157. doi:10.1177/0306624X04269412

Puzzanchera, C. & Kang, W. (2010). *Easy Access to Juvenile Court Statistics: 1985-2007.* Retrieved March 30, 2011 from: http://ojjdp.ncjrs.gov/ojstatbb/ezajcs/

Roberts, A. R. (Ed.). (2004). *Juvenile justice sourcebook: Past, present, and future.* New York: Oxford University Press.

Rohde, P., Seeley, J. R., & Mace, D. E. (1997). Correlates of suicidal behavior in a juvenile detention population. *Suicide and Life-Threatening Behavior, 27,* 164-175.

Russell, S. T. & Joyner, K. (2001). Adolescent sexual orientation and suicide risk: Evidence from a national study. *American Journal of Public Health, 91*(8), 1276-1281.

Sanislow, C. A., Grilo, C. M., Fehon, D. C., Axelrod, S. R., & McGlashan, T. H. (2003). Correlates of suicide risk in juvenile detainees and adolescent inpatients. *Journal of the American Academy of Child and Adolescent Psychiatry, 42* (2), 234-240. doi:10.1097/00004583-200302000-00018

Shahar, G., Bareket, L., Rudd, M. D., & Joiner, T. E. (2006). In severely suicidal young adults, hopelessness, depressive symptoms, and suicidal ideation constitute a single syndrome. *Psychological Medicine, 36,* 913-922. doi:10.1017/S0033291706007586

Shapiro, S. S. & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika, 52*(3), 591-611. doi:10.2307/2333709

Sharaf, A. Y., Thompson, E. A., & Walsh, E. (2009). Protective effects of self-esteem and family support on suicide risk behaviors among at-risk adolescents. *Journal of Child and Adolescent Psychiatric Nursing, 22*(3), 160-168. doi:10.1111/j.1744-6171.2009 .00194.x

Shelley-Tremblay, J., O'Brien, N., & Langhinrichsen-Rohling, J. (2007). Reading disability in adjudicated youth: Prevalence rates, current models, traditional and innovative treatments. *Aggression and Violent Behavior, 12,* 376-392. doi:10.1016/j.avb.2006.07.003

Sickmund, M. (2007). Deaths in juvenile custody, 2004. *Corrections Today, 69*(1), 68-69.

Smyth, C. L. & Maclachlan, M. (2005). Confirmatory factor analysis of the Trinity Inventory of Precursors to Suicide (TIPS) and its relationship to hopelessness and depression. *Death Studies, 29*, 333-350. doi:10.1080/07481180590923724

Sofronoff, K., Dalgliesh, L., & Kosky, R. (2005). *Out of options: A cognitive model of adolescent suicide and risk-taking*. Cambridge, UK: Cambridge University Press. doi:10.1017/CBO9780511509599

Spirito, A., Bond, A., Kurkjian, J., Devost, L., Bosworth, T., & Brown, L. K. (1993). Gender differences among adolescent suicide attempters. *Crises, 14,* 178–184.

Spirito, A., Valeri, S., Boergers, J., & Donaldson, D. (2003). Predictors of continued suicidal behavior in adolescents following a suicide attempt. *Journal of Clinical and Child and Adolescent Psychology, 32*(2), 284-289. doi:10.1207/S15374424JCCP320_14

Sprinkle, S. D., Lurie, D., Insko, S. L., Atkinson, G., Jones, G. L., Logan, A. R., & Bissada, N. N. (2002). Criterion validity, severity cut scores, and test-retest reliability of the Beck Depression Inventory-II in a university counseling center sample. *Journal of Counseling Psychology, 49*(3), 381-385. doi:10.1037/0022-0167.49.3.381

Stahl, A. (2008). *Delinquency cases in juvenile courts, 2004.* Washington D.C.: United States Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Steer, R. A., Kumar, G., & Beck, A. T. (1993). Self-reported suicidal ideation in adolescent psychiatric inpatients. *Journal of Consulting and Clinical Psychology, 61*(6), 1096-1099.

Steer, R. A., Kumar, G., Ranieri, W. F., & Beck, A. T. (1998). Use of the Beck Depession Inventory-II with adolescent psychiatric outpatients. *Journal of Psychopathology and Behavioral Assessment, 20,* 127-137. doi:10.1023/A:1023091529735

Storch, E. A., Roberti, J. W., & Roth, D. A. (2004). Factor structure, concurrent validity, and internal consistency of the Beck Depression Inventory, Second Edition in a sample of college students. *Depression and Anxiety, 19*, 187-189. doi:10.1002/da.20002

Streiner, D. L. (2003). Being inconsistent about consistency: When coefficient alpha does and doesn't matter. *Journal of Personality Assessment, 80*, 99-103.

Streiner, D. L. (2010). Measure for measure: New developments in measurement and item response theory. *Canadian Journal of Psychiatry, 55*(3), 180-186.

Stouthamer-Loeber, M., & Loeber, R. (2002). Lost opportunities for intervention: Undetected markers for the development of serious juvenile delinquency. Criminal Behavior and Mental Health, 12, 69-82. doi:10.1002/cbm.487

Subramaniam, G., Harrell, P., Huntley, E., & Tracy, M. (2009). Beck Depression Inventory for depression screening in substance-abusing adolescents. *Journal of Substance Abuse Treatment, 37*, 25-31. doi:10.1016/j.jsat.2008.09.008

Tabachnick, B. G. & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). Boston: Pearson Education Inc.

Testa, C. R. & Steinberg, L. (2010). Depressive symptoms and health-related risk-taking in adolescents. *Suicide and Life-Threatening Behavior, 40*(3), 298-305. doi:10.1521/suli.2010.40.3.298

Teplin, L. A., Abram, K. M., McClelland, G. M., Dulcan, M. K., & Mericle, A. A. (2002). Psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry, 59*, 1133-1143. doi:10.1001/archpsyc.59.12.1133

Thompson, E. A., Mazza, J. J., Herting, J. R., Randell, B. P., & Eggert, L. L. (2005). The mediating roles of anxiety, depression and hopelessness on adolescent suicidal behavior. *Suicide and Life-Threatening Behavior, 35*, 14-34. doi:10.1521/suli.35.1.14.59266

Thorndike, R. M. (2005). *Measurement and evaluation in psychology and education.* Upper Saddle River, New Jersey: Pearson Education, Inc.

Tuisku, V., Pelonen, M., Karlsson, L., Kiviruusu, O., Holi, M., Ruuttu, T.,...Marttunen, M. (2006). Suicidal ideation, deliberate self-harm behavior and suicide attempts among adolescent outpatients with depressive mood disorders and comorbid axis I disorders. *European Child Adolescent Psychiatry, 15*, 199-206. doi:10.1007/s00787-005-0522-3

United States Census Bureau. (2009). *2005-2009 American Community Survey.* Retrieved August 22, 2011 from: http://factfinder.census.gov/servlet/STTable?_bm=y&geo_id=01000US&-gr_name=ACS_2009_5YR_GOO_SO901&-ds_name=ACS_2009_5YR_GOO&-redolog=false

United States Census Bureau. *Summary file 1 (SF1).* Retrieved February 19, 2010, from: http://factfinder.census.gov/servlet/DTSubjectShowTablesServlet?_ts=284747718031.

United States Census Bureau. (2011). *Age and sex composition: 2010.* Retrieved August 22, 2011 from: http://census.gov/prod/cen2010/briefs/c2010br-03.pdf

United States Department of Health and Human Services (2010). Deaths: Final data for 2007. *National Vital Statistics Reports, 58*(19).

Valtonen, H. M., Suominen, K., Sokero, P., Mantere, O., Arvilommi, P., Leppamki, S., & Isometsa, E. T. (2009). How suicidal bipolar patients are depends on how suicidal ideation is defined. *Journal of Affective Disorders, 118*(1-3), 48-54. doi:10.1016/j.jad.2009.02.008

VanVoorhis, C. R. W. & Blumentritt, T. L. (2007). Psychometric properties of the Beck Depression Inventory-II in a clinically-identified sample of Mexican American adolescents. *Journal of Child and Family Studies, 16*(6), 789-798. doi:10.1007/s10826-006-9125-y

Verona, E. & Javdani, S. (2011). Dimensions of adolescent psychopathology and relationships to suicide risk indicators. *Journal of Youth and Adolescence, 40*, 958-971. doi:10.1007/s10964-011-9630-1

Walsh, E., & Eggert, L. L. (2007). Suicide risk and protective factors among youth experiencing school difficulties. *International Journal of Mental Health Nursing, 16*(5), 349-359. doi:10.1111/j.1447-0349.2007.00483.x

Wasserman, G. A., Jensen, P.S., Ko, S. J., Cocozza, J., Trupin, E., Angold, A., ...Grisso, T. (2003). Mental health assessments in juvenile justice: Report on the consensus conference. *Journal of the American Academy of Child & Adolescent Psychiatry, 42*(7), 752-761. doi:10.1097/01.CHI.0000046873.56865.4B

Wasserman, G. A. & McReynolds, L. S. (2006). Suicide risk at juvenile justice intake. *Suicide and Life Threatening Behavior, 36*(2), 239-249. doi:10.1521/suli.2006.36.2.239

Wasserman, G. A., McReynolds, L. S., Lucas, C., Fisher, P. W., and Santos, L. (2002). The Voice DISC-IV with incarcerated male youth: Prevalence of disorder. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*, 314-321. doi:10.1097/00004583-200203000-00011

Wasserman, G. A., McReynolds, L. S., Schwalbe, C. S., Keating, J. M., & Jones, S. A. (2010). Psychiatric disorder, comorbidity, and suicidal behavior in juvenile justice youth. *Criminal Justice and Behavior, 37*(12), 1361-1376. doi: 10.1177/0093854810038548103827 51

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 54*, 1063–1070.

Wetzler, S., Asnis, G. M., Hyman, R. B., Virtue, C., Zimmerman, J., & Rathus, J. H. (1996). Characteristics of suicidality among adolescents. *Suicide and Life-Threatening Behavior, 26*(1), 37-45.

Wichstrom, L. & Rossow, I. (2002). Explaining the gender difference in self-reported suicide attempts: A nationally representative study of Norwegian adolescents. *Suicide and Life-Threatening Behavior, 32*, 101-116. doi:10.1521/suli.32.2.101.24407

Wilkinson, P., Kelvin, R., Roberts, C., Dubicka, B., & Goodyear, I. (2011). Clinical and psychosocial predictors of suicide attempts and nonsuicdal self-injury in the Adolescent Depression Antidepressants and Psychotherapy Trial (ADAPT). *American Journal of Psychiatry, 168*, 495-501. doi: 10.1176/appi.ajp.2010.100507 18

Winfree, T. L. & Jiang, S. (2010). Youthful suicide and social support: Exploring the social dynamics of suicide-related behavior and attitudes within a national sample of U.S. adolescents. *Youth Violence and Juvenile Justice, 8*(1), 19-37. doi: 10.1177/154 1204009338252

Winters, N. C., Myers, K., & Proud, L. (2002). Ten-year review of rating scales. III: Scales assessing suicidality, cognitive style, and self-esteem. *Journal of the American Academy of Child & Adolescent Psychiatry, 41*(10), 1150-1181. doi:10.10 97/00004583-200210000-00006

Witte, T. K., Fitzpatrick, K. K., Warren, K. L., Schatschneider, C., & Schmidt, N. B. (2006). Naturalistic evaluation of suicidal ideation: Variability and relation to attempt status. *Behaviour Research and Therapy, 44*, 1029-1040. doi:10.1016/j.bra t.2005.08.004

World Health Organization, Department of Mental Health. (2000). *Preventing suicide: A resource for teachers and other school staff.* Geneva, Switzerland: Author.

Appendix A

Alaska Division of Juvenile Justice Mental Health/Suicide Screening Form

Alaska Division of Juvenile Justice
Mental Health/Suicide Screening

Name: _____ DOB: _____ Gender: Male Female
Admit Date/Time: _____ Screening Date/Time: _____
Prior Admit: Yes No Appears to be under influence of alcohol and/or drugs?: Yes No

Youth admitted under the influence of alcohol and/or drugs, or who are uncooperative, should not be given screening until stabilized. If youth is placed in a room before screening is done, room must be suicide resistant and youth will be on, at minimum, Suicide Low.

	Mental Health Questions	Y	N	Comments
1.	Can you tell me your name, the date (month, day, year), & place (facility, city, state)? **If youth makes many errors or can't answer, check "Y."**			
2.	Have you ever talked with a counselor, been in treatment or been hospitalized for depression or suicide? If yes, when and where?			
3.	Are you taking any medications now or have you within the last few months? If yes, what was the name and when was the last time you took them?			**Notify medical staff**
4.	Have you ever heard voices or seen things that other people couldn't hear or see? If yes, when was the last time this happened?			

	Suicide Questions	Y	N	Comments
1.	Are you feeling embarrassed about or afraid of what your family or others will think about your being locked-up?			
2.	Have you experienced any major losses or deaths in the last year? If yes, describe briefly.			
3.	Have you been spending more time alone, away from family and friends, than usual?			
4.	Has anyone in your family or someone you know attempted or committed suicide? If yes, who, when, and how?			
5.	Have you used alcohol and/or drugs in the last month? If yes, when did you last use and what did you use?			
6.	Have you ever thought about killing yourself? If yes, when was the last time?			
7.	Have you ever tried to kill yourself? If yes, when and how?			

8.	Have you recently harmed yourself or engaged in risky behavior (cut, scratched, burned, punched walls, etc.)? If yes, when and how?			
9.	Are you thinking about killing or hurting yourself now?			
10.	Do you have a plan to kill yourself? Do you have a plan to hurt yourself? If yes, what is your plan?			

Ask youth if he/she is currently experiencing any of the following: Check all that apply:

- ☐ Sad or irritable
- ☐ Feeling worthless or guilty
- ☐ Feeling tired, loss of energy
- ☐ Lost interest in things you enjoy
- ☐ Change in appetite and weight
- ☐ Sleeping more than usual
- ☐ Sleeping less than usual
- ☐ Not able to concentrate
- ☐ Mood swings
- ☐ Feeling hopeless
- ☐ Youth answered "no" to all

	Staff Observations	Y	N	Comments
1.	Is the youth crying or does he/she appear extremely sad and/or depressed?			
2.	Does the youth appear agitated, anxious and/or irritated?			
3.	Does the youth talk very rapidly or seem to be in an extremely good mood?			
4.	Does the youth talk or act in a way that is very unusual? (Examples: talking in rhymes, jumping from one unrelated topic to another, repeatedly picking on their skin, believing his/her ideas are controlled by others.)			
5.	Is there any documentation that records previous suicide observational levels from facilities or referring agency?			

Appendix B

Mental Health/Suicide Screening Suicide Watch Level Assignment Guidelines

Mental Health/Staff Observations STATUS GUIDELINES:

The following cases require a mental health and/or psychiatric referral, and possibly hospital placement (depending on severity):

- If the youth cannot correctly identify his/her name, the date, or the place, and the inability is not due to cultural differences.
- If the youth answers that he/she is currently hearing voices or seeing things that others cannot hear or see.
- If the youth is talking or acting in a way that is highly unusual, is crying excessively and/or appears extremely depressed and this behavior reduces the youth's ability to function.

Suicide STATUS GUIDELINES:

- **Youth answers "No" to all of the suicide questions 1-10:**

  Youth may be placed on Standard Supervision (SS) status.

- **Youth answers "Yes" to any of the questions 1-5:** May warrant placement on Suicide Low or Suicide High, depending on how recent, frequent and acute the circumstances, and viewed in conjunction with other risk factors. The more "Yes" responses the youth provides to these questions, the more likely the youth may need to be placed on Suicide Level One or Two.

- **Youth answers "Yes" to any of the questions 6-8:** The need for Suicide Low or Suicide High will be considered and determined by how recent, frequent and acute the circumstances, and viewed in conjunction with other risk factors. If youth is not placed on Suicide Low after answering "Yes" to any of these questions, the Shift Supervisor shall explain why in "COMMENTS" section below. **At minimum, Suicide Low will be mandatory through the first 24 hours if the youth answered "Yes" to any of the questions 6-8 AND these thoughts or actions occurred within the last 30 days.**

- **Youth answers "Yes" to either question 9 or 10:** Mandatory Suicide High status.

  COMMENTS: **(Shift Supervisor explain why if youth is not being placed on Suicide Low per above guidelines):**

  _____

  _____

  _____

_____

_____

Youth placed on:

☐**Standard Supervision** (SS) (15 min room checks)
☐**Suicide Low** (SL) (10 min room checks) ☐**Suicide High** (SH) (constant supervision)

During normal business hours, the Unit Supervisor, Mental Health Clinician and parent shall be notified immediately in all cases when a resident is placed on any Suicide Level. In facilities that do not have a Mental Health Clinician, the medical staff and/or Superintendent will be notified immediately when a resident is placed on any Suicide Level. After normal business hours, leave a voice mail message or send an email to both the Unit Supervisor and Mental Health Clinician for residents placed on any suicide level. If a resident needs to be assessed by a QMHP for suicide status in facilities that do not have a Mental Health Clinician or medical staff available, contact the local community mental health center (CMHC) to schedule an emergency assessment (for a list of CMHC phone numbers see Attachment D). .

Check who was notified: ☐**MHC** ☐**Unit Supervisor** ☐**Medical** ☐**Superintendent** ☐ **SDO** ☐ **Parent**

Screening Staff Signature: _____ Date:_____

Shift Supervisor Signature: _____ Date:_____

Mental Health Clinician Signature: _____ Date:_____

Unit Supervisor Signature: _____ Date: _____

If no MHC, Superintendent: _____ Date: _____

Copy of MHSS forwarded to medical staff: ☐Yes ☐No

Copy to: resident file____, medical file____, mental health file____,

Appendix C

Alaska Division of Juvenile Justice

Suicide Status Definitions and Minimum Supervision Standards

Standard Supervision Status: This status is reserved for residents who have been administered the Alaska Division of Juvenile Justice Mental Health/Suicide Screening and do not meet criteria for suicide level placement. Staff should remain mindful that all residents have the potential to become suicidal.

- Staff are to provide ongoing interaction, monitoring and supervision of residents, and know their whereabouts and activities, at all times.
- All residents are to be checked, at minimum, every 15 minutes when in rooms; the checks are to be recorded on room check sheets.

Suicide Low (SL): This level is reserved for residents who may or may not have expressed suicidal ideation or intention to harm self, but are exhibiting a heightened level of emotional distress, anxiety, agitation, or depression in addition to having a recent history of self destructive behavior. This level also includes residents who may be verbalizing a wish to die without a specific threat or plan, and who may be exhibiting behavior that could potentially cause harm but is not lethal (example: scratching self with paper clip).

- The resident will remain within ten (10) minute checks of staff supervision at all times. One staff will be assigned to monitor the resident and will be aware of resident's location and activities at all times, though not necessarily in direct sight contact at every moment.
- Observation of the resident will be made on the Suicide Observation Log form during random intervals. These intervals are random checks conducted on an irregular and unpredictable schedule. The verbal check-in is to be recorded on the Suicide Observation Log Sheet. The resident will be added to the Daily Suicide Watch List.
- The resident will be placed in a suicide resistant room. When the resident is in room, staff will perform random ten (10) minute checks and record this on the Suicide Observation Log. During sleeping hours, staff will visually confirm that the resident is breathing and appears normal during the room checks.
- The resident may not have in his/her possession any articles that are potentially harmful. At least once per each shift the assigned staff shall search the resident and surroundings for any articles that could be used in a harmful manner; these checks will be recorded on the Suicide Observation Log.
- The QMHP and/or medical staff will meet with the resident daily during the normal work week to reassess the suicide status. The order of this status will

remain in effect until the QMHP or medical staff with the concurrence of the treatment team, agrees that it should be changed or discontinued.

Suicide High (SH): This level is reserved for residents who are actively suicidal, either threatening or engaging in suicidal behavior. Examples of this behavior include verbal or written statements of planning to kill self with a viable and lethal method and/or exhibiting suicidal behaviors that could lead to potentially lethality (making a noose, attempting to strangle self with hands or items). Residents who are hearing command hallucinations to harm self and/or others should also be placed on this level.

- The resident will remain within face to face, continuous and uninterrupted staff supervision at all times. The Shift Supervisor will assign specific staff at the start of the shift, noted in the Unit Log and confirmed the assigned staff's signature, to provide constant line-of-sight supervision of the resident. The staff must be in close enough proximity to the resident that the staff could easily intervene if the resident begins to make suicidal gestures (attempts to choke self, fashions noose out of items).

- The resident will be placed in a suicide resistant room. When resident is in room, staff will provide continuous and uninterrupted supervision and this will be recorded on the Suicide Observation Log Sheet. While sleeping, staff will visually confirm that the resident is breathing and appears normal.

- The resident may not have in his/her possession any articles that are potentially harmful. At least once per each shift the assigned staff shall search the resident and surroundings for any articles that could be used in a harmful manner; these checks will be recorded on the Suicide Observation Log Sheet.

- The QMHP and/or medical staff will meet with the resident daily during the normal work week to reassess the suicide status. The order of the status will remain in effect until the QMHP or medical staff with the concurrence of the treatment team, agrees that it should be discontinued. A resident on Suicide High shall always be downgraded to Suicide Low for a reasonable period of time, prior to being removed for suicide precaution.

Appendix D

University of Alaska Anchorage Institutional Review Board Approval Letter

UAA UNIVERSITY of ALASKA ANCHORAGE

Office of Research and Graduate Studies

August 11, 2008

Jaymes Gonzales, MS
4301 Defiance Street
Anchorage, Alaska 99504

Dear Mr. Gonzales:

On May 15, 2008 the Institutional Review Board of the University of Alaska Anchorage reviewed your proposal entitled *Alaska Youth Detention Center Suicide Assessment Validation.* At that meeting, the Board conditionally approved this project with certain specific revisions. The revised submission was then to be reviewed by a subcommittee of the IRB for final approval.

Having now received your revisions and final approval by the subcommittee, which included all the changes suggested by the Board and in keeping with the usual policies and procedures of the UAA Institutional Review Board, your proposal is judged as fully satisfying the U.S. Department of Health and Human Services requirements for the protection of human research subjects (45 CFR 46 as amended). This constitutes approval for you to conduct the study as presented to the Board.

This approval is in effect for one year. If the study extends beyond a year from the date of this submission, you are required to submit a Progress Report (see http://www.uaa.alaska.edu/research/ric/irb/documents.cfm) and to request continuing approval of your project from the Board. At the conclusion of your project, you are required to submit a Final Report to the IRB.

On behalf of the Board, I wish to extend my best wishes to you for success in accomplishing the objectives of your project.

Sincerely,

Claudia Lampman

Claudia Lampman, Ph.D.
Chair, Institutional Review Board

cc: Dr. Robert Boeckmann, Psychology Department
Dean James Liszka, College of Arts and Sciences

3211 Providence Drive • Anchorage, Alaska 99508-4614 • T 907.786.1196 • F 907.786.1021 • www.uaa.alaska.edu/research

Appendix E

Letter of Support from McLaughlin Youth Center Superintendent

STATE OF ALASKA

SARAH H.PALIN, GOVERNOR

DEPARTMENT OF HEALTH AND SOCIAL SERVICES
DIVISION OF JUVENILE JUSTICE

McLaughlin Youth Center
2600 Providence Drive
Anchorage, AK 99508
Phone: (907) 261-4399
Fax: (907) 261-4308

June 19, 2008

UAA Review Board

Dear UAA Institutional Review Board,

The Division of Juvenile Justice is seeking to validate our current mental health and suicide screening tool and have requested the help of Dr. Boeckmann and graduate student Jaymes Gonzales. I am aware that Jaymes Gonzales is a doctoral student in the UAF-UAA Joint PhD Program in Clinical-Community Psychology and that he may be using archival data related to the mental health and suicide screening tool validation for his doctoral dissertation. I am supportive of this use of archival data and of his research as outlined in the IRB proposal titled "Alaska youth detention center suicide assessment validation."

Sincerely,

Barbara Henjum, Superintendent
McLaughlin Youth Center